



# LonWorks Gateway

Basic : MIM-D00A

Model : MIM-B18

MIM-B18C

Model Code : MIM-B18

MIM-B18C

# ***SERVICE*** Manual

## LonWorks Gateway



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Refer to the service manual in the GSPN(see the rear cover) for the more information.

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# 1. Precautions

## 1-1. Precautions for the Service

- **Use the standard parts when replacing the electric parts.**
  - Confirm the model name, rated voltage, rated current of the electric parts.
- **Repair the disconnection of HARNESS securely when repairing the break down.**
  - If there is any connection error, it causes an abnormal noise and incorrect operation.
- **In case that you assemble or disassemble the products with laying it on the side, do work on the work cloth.**
  - If not, the exterior of products can be scratched.
- **Remove dust and foreign materials from harness, connection part, and inspection part thoroughly when repairing the break down.**
  - It protects the danger of fire such as tracking and short.
- **Check the assembly status of parts after repairing the break down.**
  - It should be same as the status before repairing.

## 1-2. Precautions for the Static Electricity and PL

- **As the PCB power terminal has a weakness for the static electricity, pay attention to it during the repair and measurement.**
  - Work with insulation gloves during the repair and measurement of PCB.
- **Check the distance between the product and the other electronic appliances such as TV, video, and audio.**  
**It should be over 2m.**
  - If not, it causes a bad picture quality or a noise.
- **Repairing the products by consumer should be strictly prohibited.**
  - There is a danger of electric shock or fire due to incorrect disassembly.

## 1-3. Precautions for the Safety

- **Do not pull any electric wires and do not touch an auxiliary power switch with a wet hand.**
  - There is a danger of electric shock or fire.
- **In case any wire or power plug has been damaged, replace it to eliminate any possible danger.**
- **Do not bend the power cord by force and do not put any heavy object on the power cord.**
  - There is a danger of electric shock or fire.
- **Do not use multi socket.**
  - There is a danger of electric shock or fire.
- **Ground the product if necessary.**
  - Be sure to ground the product if there is any danger of electric leakage due to water or moisture.
- **Be sure to turn off the auxiliary power switch or pull out the power plug during replacement or repair of electric parts.**
  - There is a danger of electric shock.

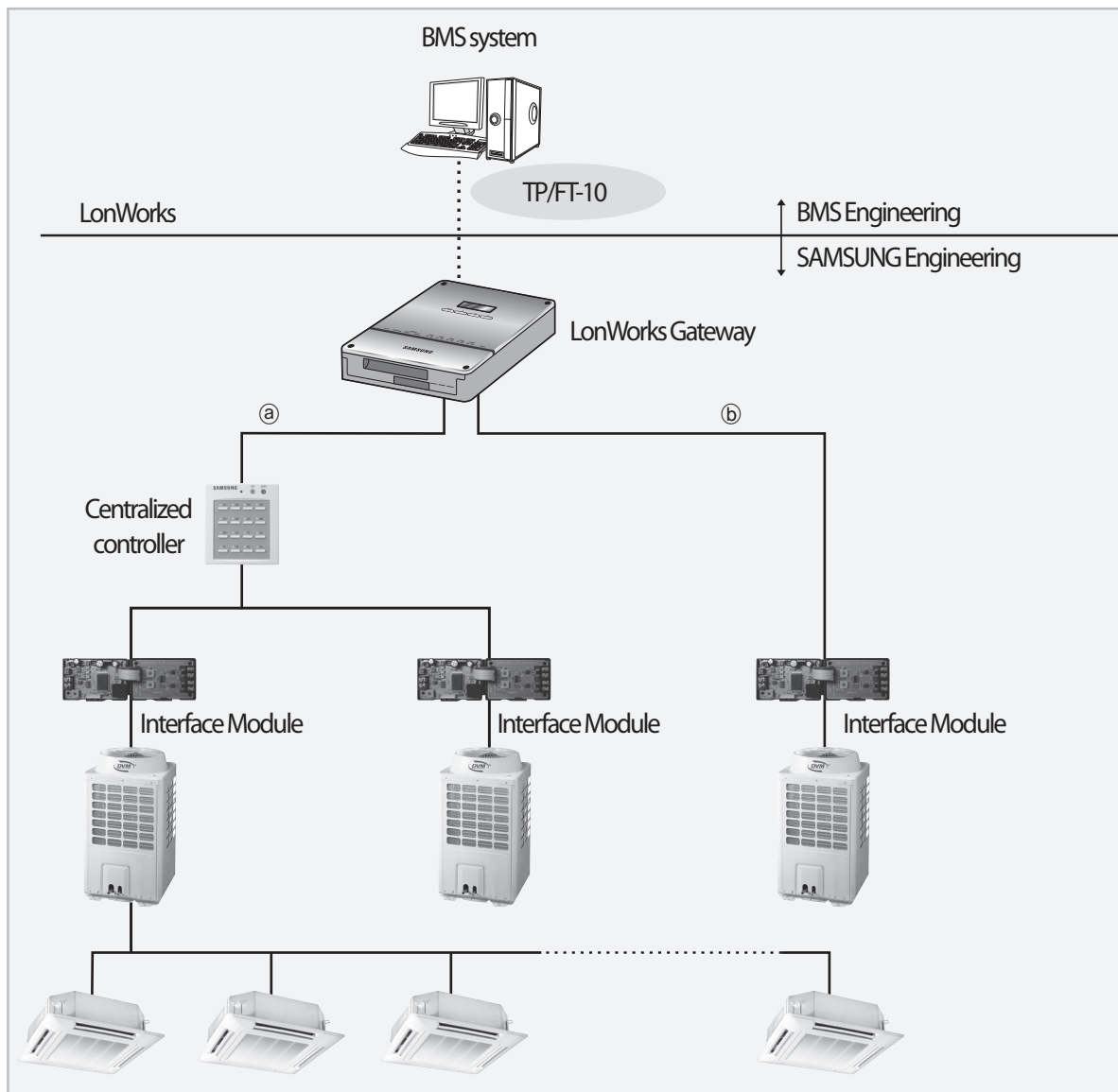


## 2. Product Specifications

### 2-1. The Feature of Product

#### 1) LonWorks Gateway

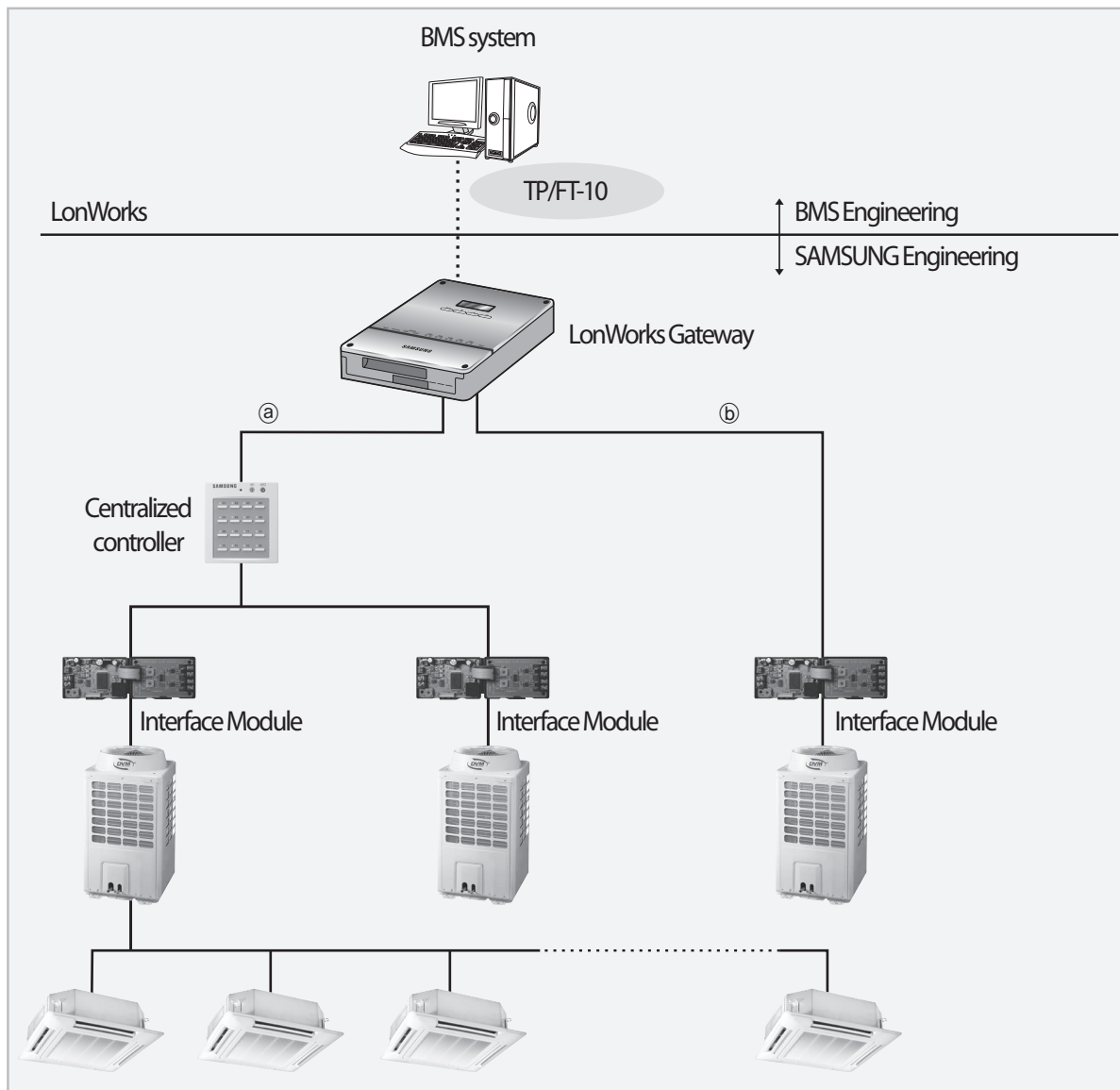
- **Connecting LonWorks Gateway with Centralized Controller (Type ㉠)**
  - You can control up to 16 Centralized Controllers and 128 indoor units by using LonWorks Gateway.
- **Connecting LonWorks Gateway with Interface Module (Type ㉡)**
  - You can control up to 80 Interface Modules and 128 indoor units by using LonWorks Gateway.
  - ※ You can connect 16 Interface Modules in each communication channel.
  - When connected Interface Modules is more, Tracking time can be long.



## 2-2. Product Specifications

Item		Remark
Power		- Adaptor : DC Adaptor - Input Voltage : 100 ~ 240V, 50/60Hz, 1.0A - Output Voltage : 12V, 3A
Size		240(W)x255(H)x64.8(D) (Unit : mm)
Weight		1.48kg
Install Method		Panel sticking
Display	LCD(Text)	
	LED	Power, CPU-Alive, Ethernet Linked, Ethernet Active, COM1, COM2, COM3, COM4, COM5 TX, RX, Check
	KEY	4keys (Menu, ▲, ▼, Set)
DI / DO	DO(Dry Contact)	Digital signal output(10CH)
	DI(Dry Contact)	Digital signal input(10CH)
Communication Port	RS-232	Debugging port
	RS485	Connection port for external devices
	Ethernet	RJ45 connector (10/100Mbps) for Ethernet
Etc.	Data Backup	SD CARD slot (SD card is needed additional purchase)

## 2-3. System Organization



## 2-4. Main Function

As an Internet based device for centralized management of system airconditioner, LonWorks Gateway supports LAN and MAN. It can operate for 24 hrs without extra computer.

- **24 Hrs operation**

- Convenience with 24hrs, 365 day operation.

- **Independent operation and Electricity saving(DMS2 Function)**

- LonWorks Gateway executes Schedule control, Peak electricity control, and Integration power distribution and independently without extra computer.
- LonWorks Gateway achieves Energy saving with no PC operation at all times.

- **Data storage(DMS2 Function)**

- LonWorks Gateway stores and check the list of malfunction, installation information of indoor unit and the data of integration power distribution itself with built-in database.

- **Management of Large quantities units**

- The maximum 256 indoor units are connected to one LonWorks Gateway realizing efficiency.

- **Automatic e-mail(DMS2 Function)**

- LonWorks Gateway sends a e-mail automatically with the list of malfunction to pre-registered address when certain problem occurred.

- **Web-server**

- You can use various function remotely without extra program.  
(Unit condition monitoring, Function control, list of malfunction, schedule setting etc.)



- **LonWorks Support**

※ Samsung is not responsible for BMS Engineering which create each device and objects.



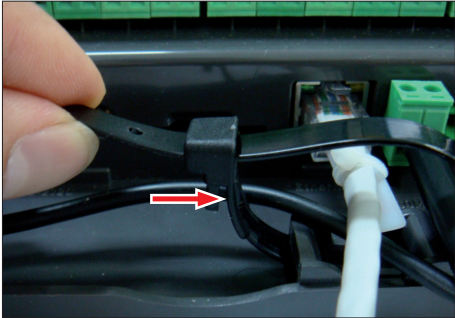
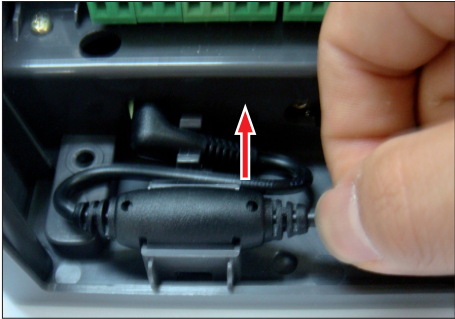
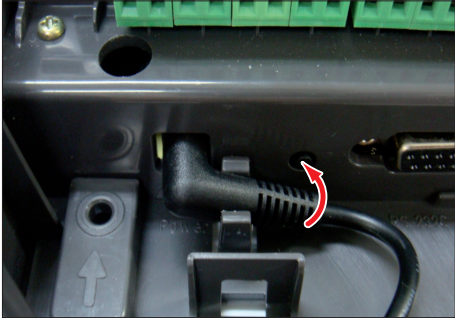
For further directions regarding on BMS engineering, consult with specialized BMS related render.

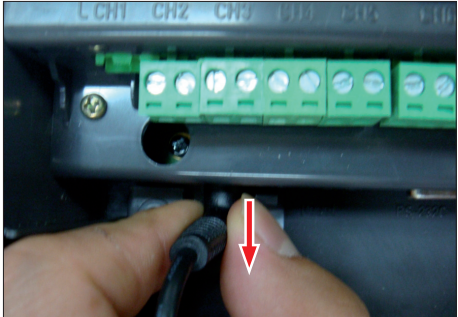
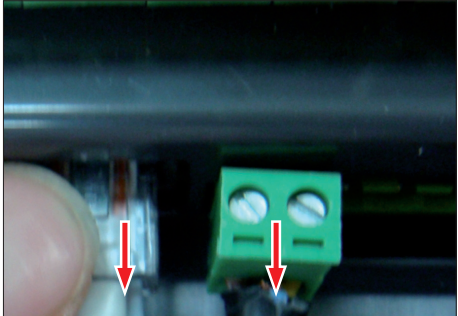
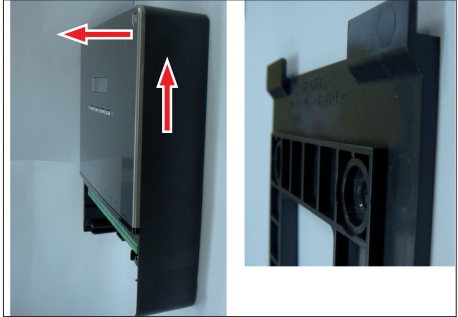
### 3. Disassembly and Reassembly


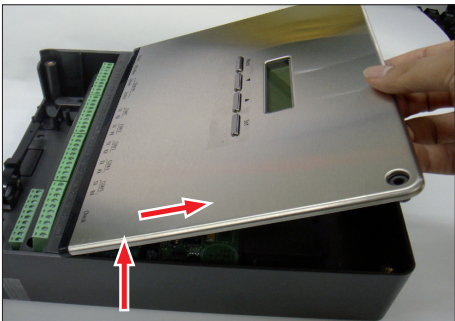
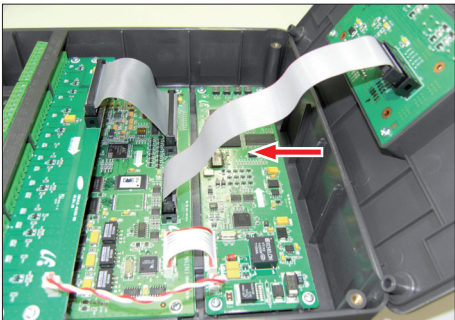
#### ■ Necessary Tools

Item	Remark
+Screw Driver	
-Screw Driver	

### 3-1. Disassembly and Reassembly

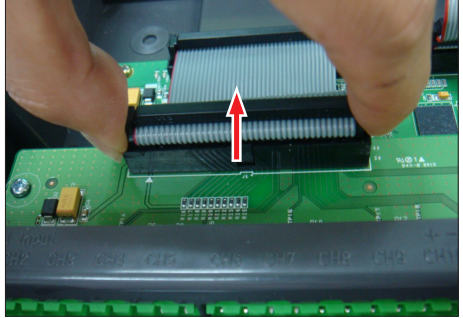
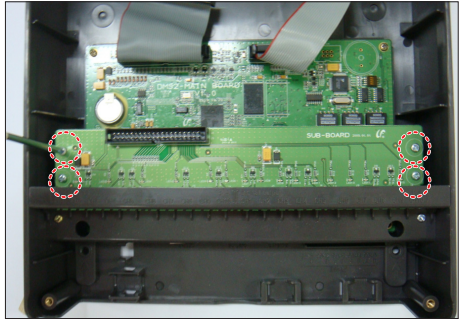
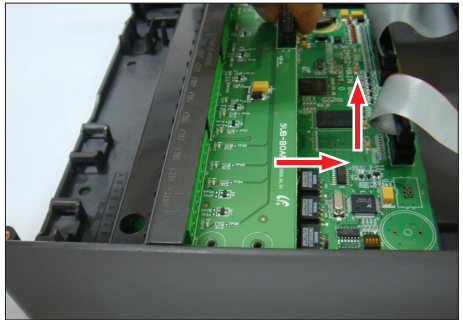
No	Parts	Procedure	Remark
1	Common	<p>1) Unscrew 2 fixing screws. (Use +Screw Driver)</p> <p>2) Detach the lower cover.</p> <p>3) Press lower part of cable tie and detach the cable tie.</p> <p>4) Pull the bead-core part of adapter.</p> <p>5) Turn connector of adapter Counterclockwise.</p>	    

No	Parts	Procedure	Remark
		<p>6) Detach the connector of adapter from LonWorks Gateway.</p> <p>7) Detach connectors for 485communication, network and DI/DO.</p> <p>8) Unscrew at red circle part. (Use +Screw Driver)</p> <p>Ref.) The case of using additional Hole for install, detach from wall after detaching upper cover.</p> <p>9) Push up LonWorks Gateway. and pull the LonWorks Gateway.0 front direction.</p>	    

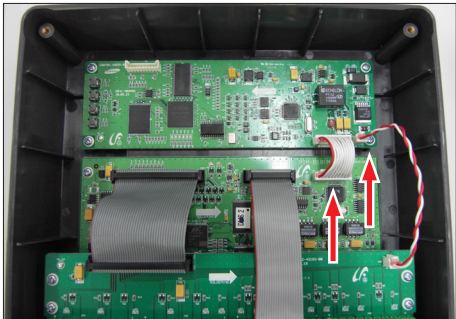
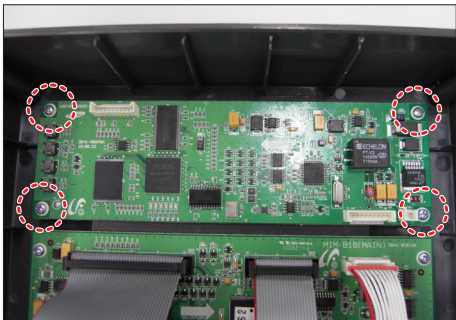
No	Parts	Procedure	Remark
		10) Unscrew 2 fixing screws at red circle.	
		11) Pick up the upper cover. Be careful not to damage LED on sub board.	
		12) As the shown picture, detach the cable between main and LCD board.	



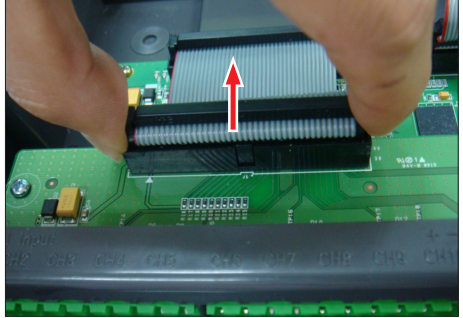
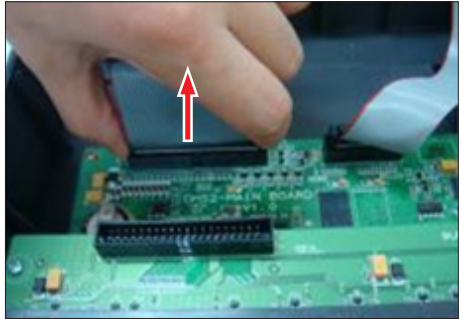
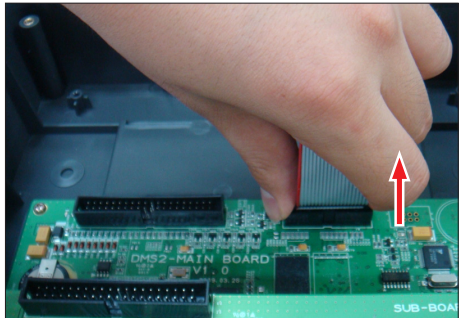
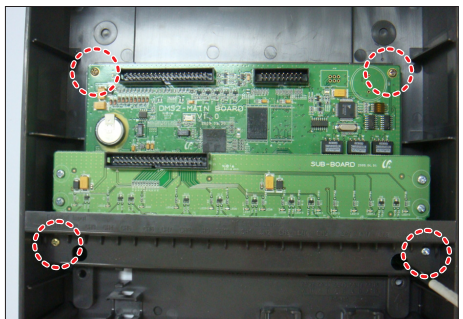
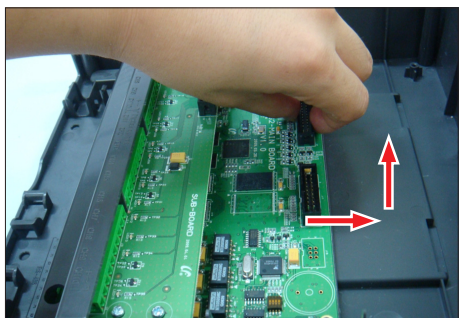
## 3-2. Sub board Disassembly and Reassembly

No	Parts	Procedure	Remark
1	Common	<p>1) As shown picture, detach the connector pulling upper direction.</p> <p>2) Unscrew 4 fixing screw on sub board. (Use +Screw Driver)</p> <p>3) Detach the sub board from LonWorks Gateway.</p>	  

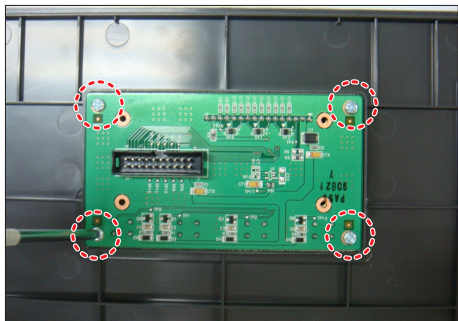
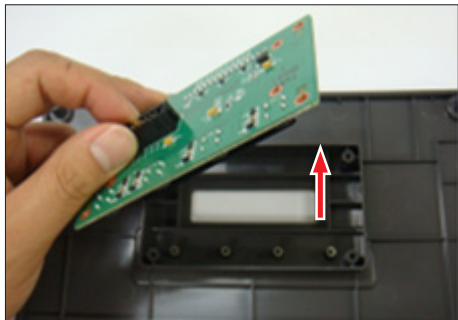
### 3-3. LonWorks board Disassembly and Reassembly

No	Parts	Procedure	Remark
1	Common	<p>1) Detach the connector on the main board. - 10pin, 2pin connector</p> <p>2) Unscrew 4 fixing screw on LonWorks board. (Use +Screw Driver)</p>	 

### 3-4. Main board Disassembly and Reassembly



No	Parts	Procedure	Remark
1	Common	<p>1) As shown picture, detach the connector on sub board pulling upper direction.</p> <p>2) Detach connector on main board, as a same way.</p> <p>3) Detach connector for connecting display board.</p> <p>4) Unscrew 4 fixing screw on main board. (Use +Screw Driver)</p> <p>5) Push up the main board and detach it from LonWorks Gateway.</p>	    

### 3-5. Display board Disassembly and Reassembly




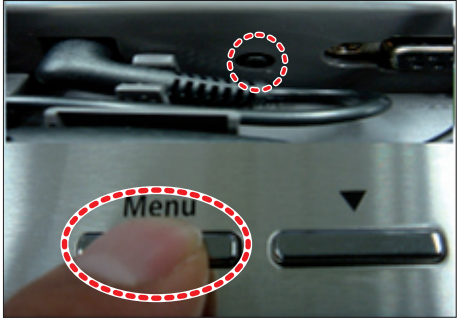
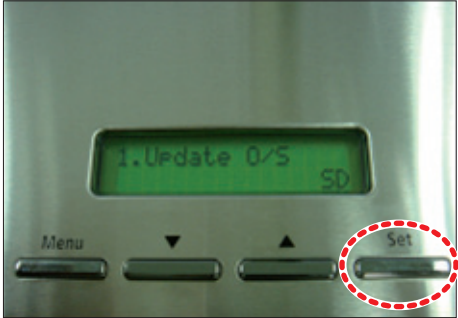
No	Parts	Procedure	Remark
1	Common	<p>1) Unscrew 4 fixing screw on display board. (Use +Screw Driver)</p> <p>2) Push up the display board and detach it from upper cover.</p>	 

## 4. Program Update



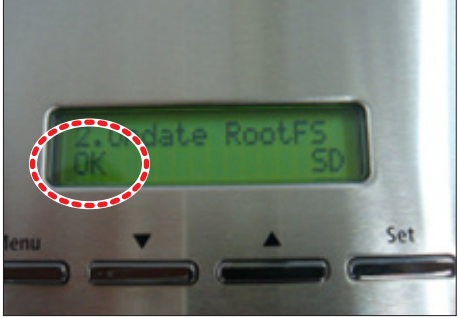
### ■ Necessary Tools

Item	Remark
+Screw Driver	
SD-CARD - At least 512MB - Type: Normal, SDHC	






## 4-1. OS Update

No	Parts	Procedure	Remark
1	Common	<p>1) Unscrew 2 fixing screws of the bottom. (Use +Screw Driver)</p> <p>2) Pull the cover of the bottom, and detach lifting up.</p> <p>3) Insert a SD card for updating software.</p> <p>4) Push [Reset] button once with pushing [Menu] button. - Keep pushing [Menu] button until "1. Update O/S" is showed.</p> <p>5) Push [Set] button after seeing "1.Update O/S" referring the right picture. (If you can't see "1.Update O/S" after completing 1)~4) with inserting SD card, Confirm whether your SD-Card has a problem.)</p>	    




No	Parts	Procedure	Remark
		<p>6) Unscrew 2 fixing screws of the bottom. (Use +Screw Driver) Like the right picture, Kernel update is completed.</p> <p>7) Click [▲] button like the right picture.</p> <p>8) Push [Set] button after seeing "Update RootFS".</p> <p>9) "Updating RootFS" is showed, the program writing step is progressed.</p> <p>10) After showing "OK" under "Updating RootFS" like the right picture, updating of Root File System is completed.</p>	    


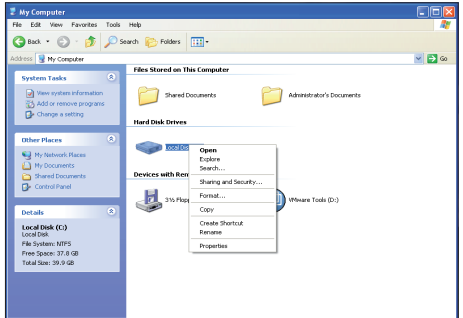
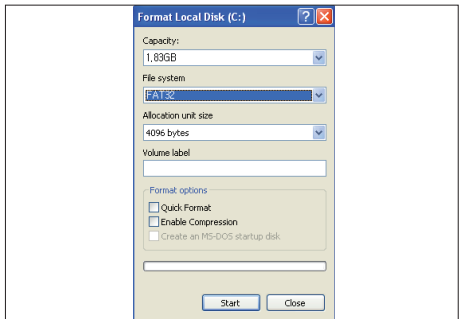
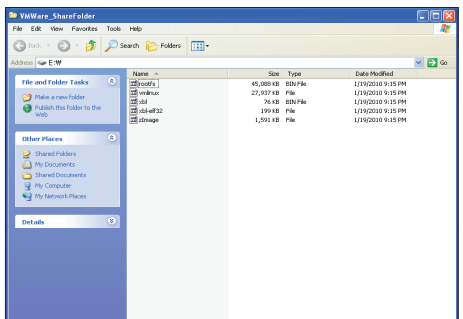
## 4-2. Application Update using SD Card

No	Parts	Procedure	Remark
1	Common	<p>1) Insert a SD card for updating.</p> <p>2) Push [Reset] button once.</p> <p>3) System is reset, Application is updated.</p> <p>4) "remove SD card" is showed like the right picture, detach SD card pushing it one more time.</p> <p>5) There is nothing on the display for a while after removing SD card, and system is reset.</p>	    


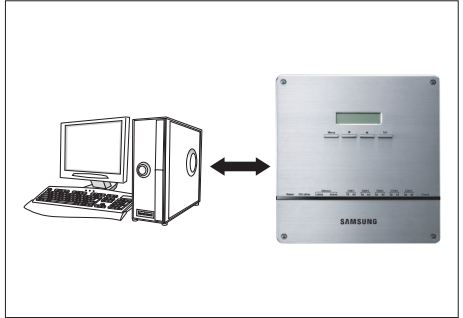
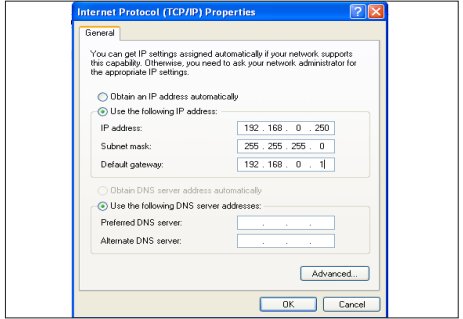
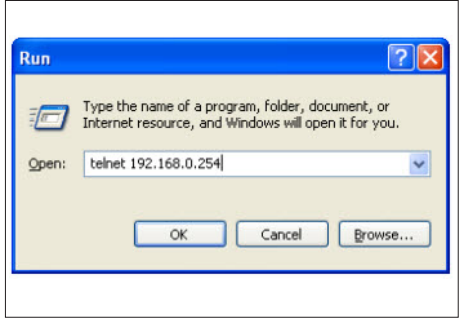
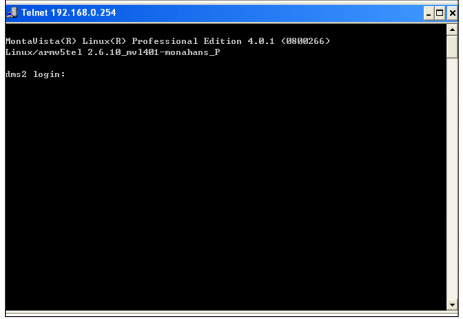



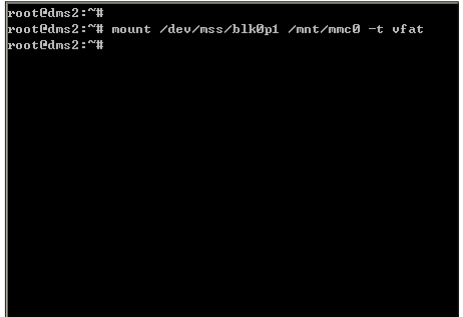
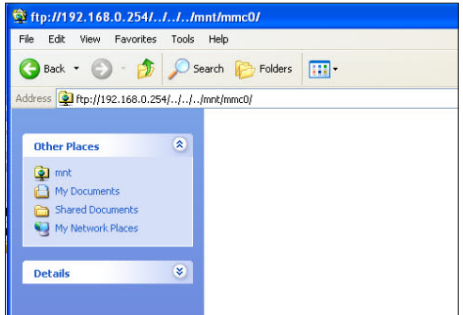
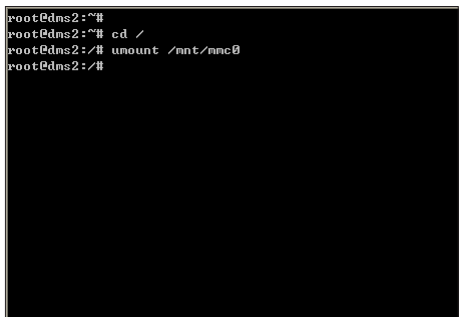
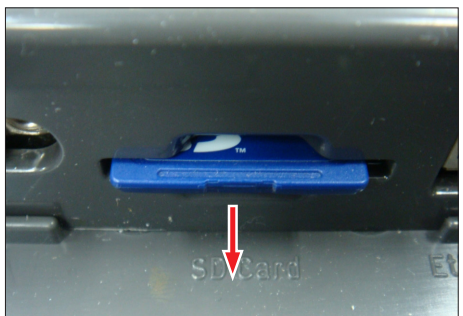
No	Parts	Procedure	Remark
		6) After completing application update, confirm IP, time and regular operation .	

## 4-3. How to make OS Update SD Card using PC


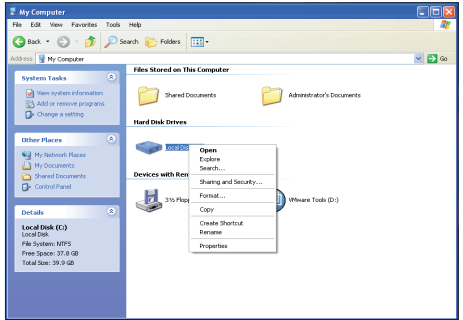
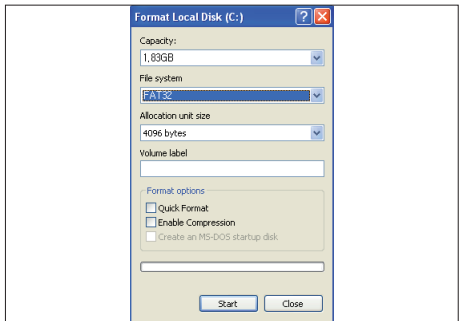
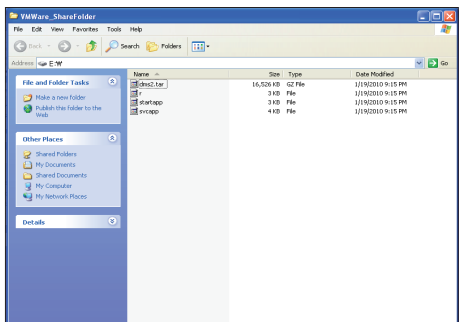
No	Parts	Procedure	Remark
1	Common	<p>1) Connect to a PC after insert a SD card into a SD card reader.</p> <p>2) Select 'Format' with right-click on the created 'Removable storage devices'.</p> <p>3) Select 'FAT32' of 'File system', and start format pushing [Start] button.</p> <p>4) Format completed, Copy the provided OS files of LonWorks Gateway to the top in SD card.          - Provided OS files : rootfs.bin, vmlinux, xbl.bin, xbl-elf32, zlmage</p> <p>5) Remove SD card from PC after completing copy.</p>	   

## 4-4. How to make OS update SD Card using LonWorks Gateway


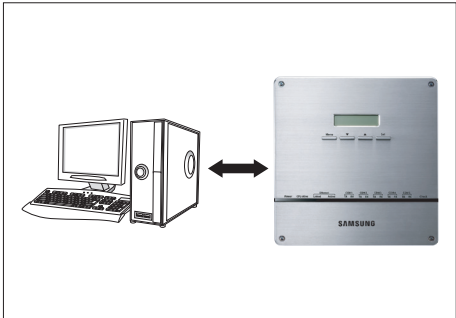
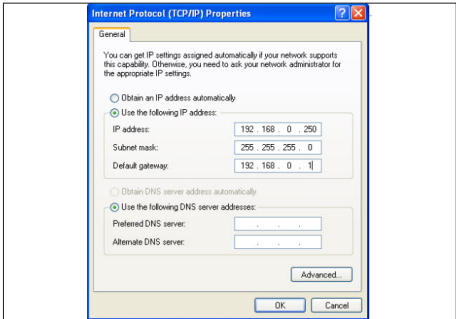
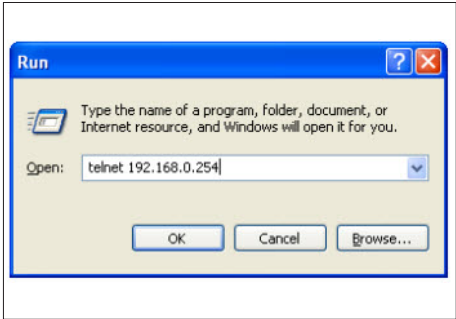
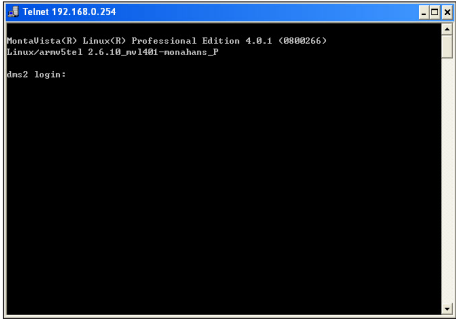
No	Parts	Procedure	Remark
1	Common	<p>1) Insert a SD card for updating.</p> <p>2) Connect LonWorks Gateway to PC with a crossover lan cable.</p> <p>3) Set IP to 192.168.0.250. - You can connect all LonWorks Gateway with 192.168.0.254.</p> <p>4) Type 'telnet 192.168.0.254' in the window of 'Run' after 'Start' button.</p> <p>5) Log on the telnet.</p>	    

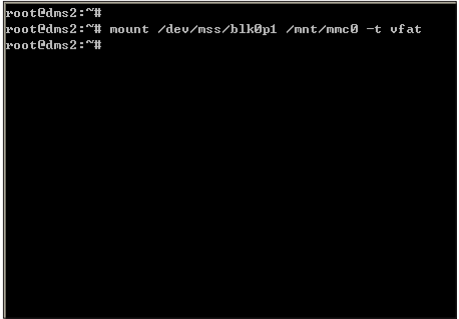
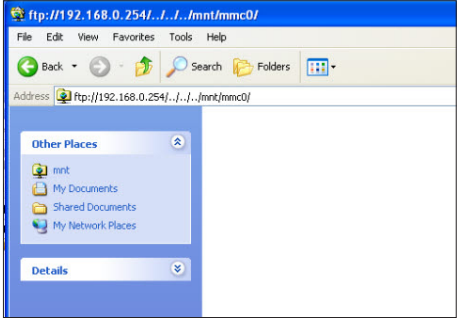

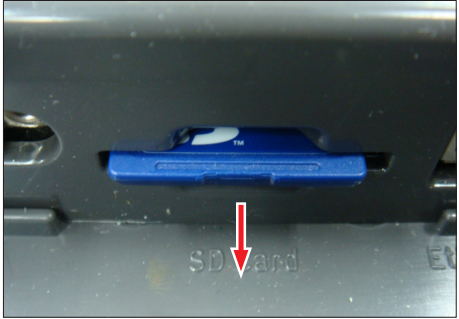
No	Parts	Procedure	Remark
		<p>6) Format SD card. - mkfs.vfat /dev/mss/blk0p1</p>	
		<p>7) Run 'mount /dev/mss/blk0p1 /mnt/mmc0 -t vfat'.</p>	
		<p>8) Copy the provided OS files of LonWorks Gateway after connecting LonWorks Gateway with FTP. You must close FTP window after completing copy. - ftp://192.168.0.254/../../../../mnt/mmc0 - Provided OS files : rootfs.bin, vmlinux, xbl.bin, xbl-elf32, zImage</p>	
		<p>9) Type the below. cd / umount /mnt/mmc0</p>	
		<p>10) Remove SD card.</p>	

## 4-5. How to make Application SD Card using PC

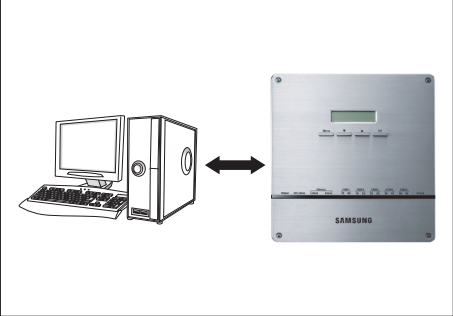
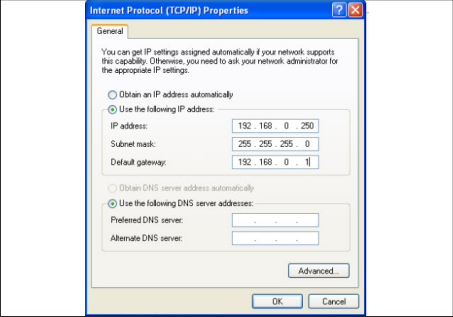
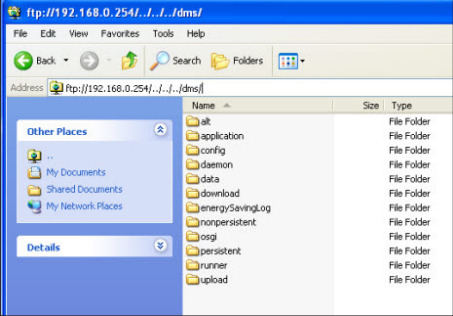

No	Parts	Procedure	Remark
1	Common	<p>1) Connect to a PC after insert a SD card into a SD card reader.</p> <p>2) Select 'Format' with right-click on the created 'Removable storage devices'.</p> <p>3) Select 'FAT32' of 'File system', and start format pushing [Start] button.</p> <p>4) Format completed, Copy the application files of LonWorks Gateway to the top in SD card. - Provided OS files : LonWorks Gateway.tar.gz, r, startapp, svcapp</p> <p>5) Remove SD card from PC after completing copy.</p>	   

## 4-6. How to make Application SD Card using LonWorks Gateway

No	Parts	Procedure	Remark
1	Common	<p>1) Insert a SD card for updating.</p> <p>2) Connect LonWorks Gateway to PC with a crossover lan cable.</p> <p>3) Set IP to 192.168.0.250. - You can connect all LonWorks Gateway with 192.168.0.254.</p> <p>4) Type 'telnet 192.168.0.254' in the window of 'Run' after 'Start' button.</p> <p>5) Log on the telnet.</p>	    

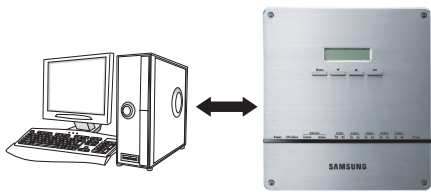
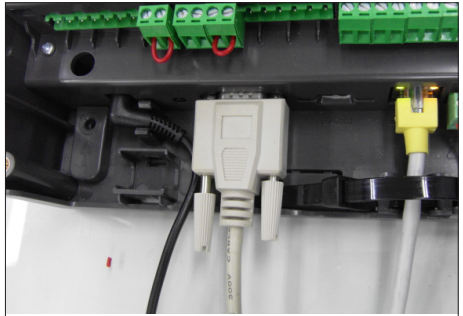
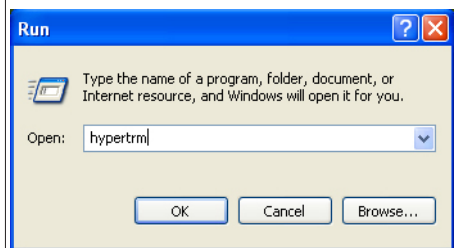
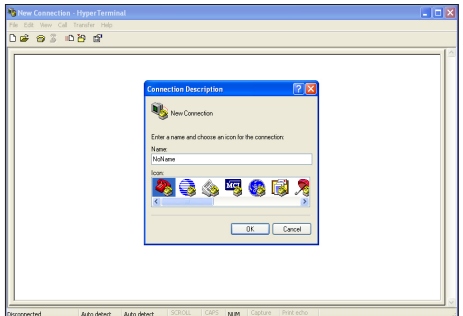
No	Parts	Procedure	Remark
		<p>6) Run 'mount /dev/mss/blk0p1 /mnt/mmc0 -t vfat'</p> <p>7) Copy the provided OS files of LonWorks Gateway after connecting LonWorks Gateway with FTP. You must close FTP window after completing copy.  - ftp://192.168.0.254/./././mnt/mmc0  - Provided OS files : LonWorks Gateway.tar.gz, r, startapp, svcapp</p> <p>8) Type the below on the telnet window.  cd /mnt/mmc0  chmod 755 svcapp  cd /  umount /mnt/mmc0</p> <p>9) Remove SD card.</p>	   

## 4-7. Application Update using FTP

No	Parts	Procedure	Remark
1	Common	<p>1) Connect LonWorks Gateway to PC with a crossover lan cable.</p> <p>2) Set IP to 192.168.0.250. - You can connect all LonWorks Gateway with 192.168.0.254.</p> <p>3) Connect to LonWorks Gateway with FTP. - ftp://192.168.0.254/././././dms</p> <p>4) Copy the provided application folder to PC and Rewrite it to the application folder in LonWorks Gateway connected by FTP.</p> <p>5) Push [Reset] button once.</p>	   



## 4-8. How to check log message with Hyper Terminal Program

No	Parts	Procedure	Remark
1	Common	<p>1) Connect LonWorks Gateway to PC with a RS232C cable.</p> <p>2) Type 'hypertrm' in the window of 'Run' after 'Start' button.</p> <p>3) Type 'name' in the window of name.</p> <p>4) Select correct Communication port.</p>	    

No	Parts	Procedure	Remark
		5) Select '115200' in the listbox of Bits per second.	
		6) Push [Reset] button once.	
		7) Check log message.	
		8) If you have a 'can't receive data' message, check UART communication. note : refer to trouble shooting 'When LonWorks data is not updating'.	

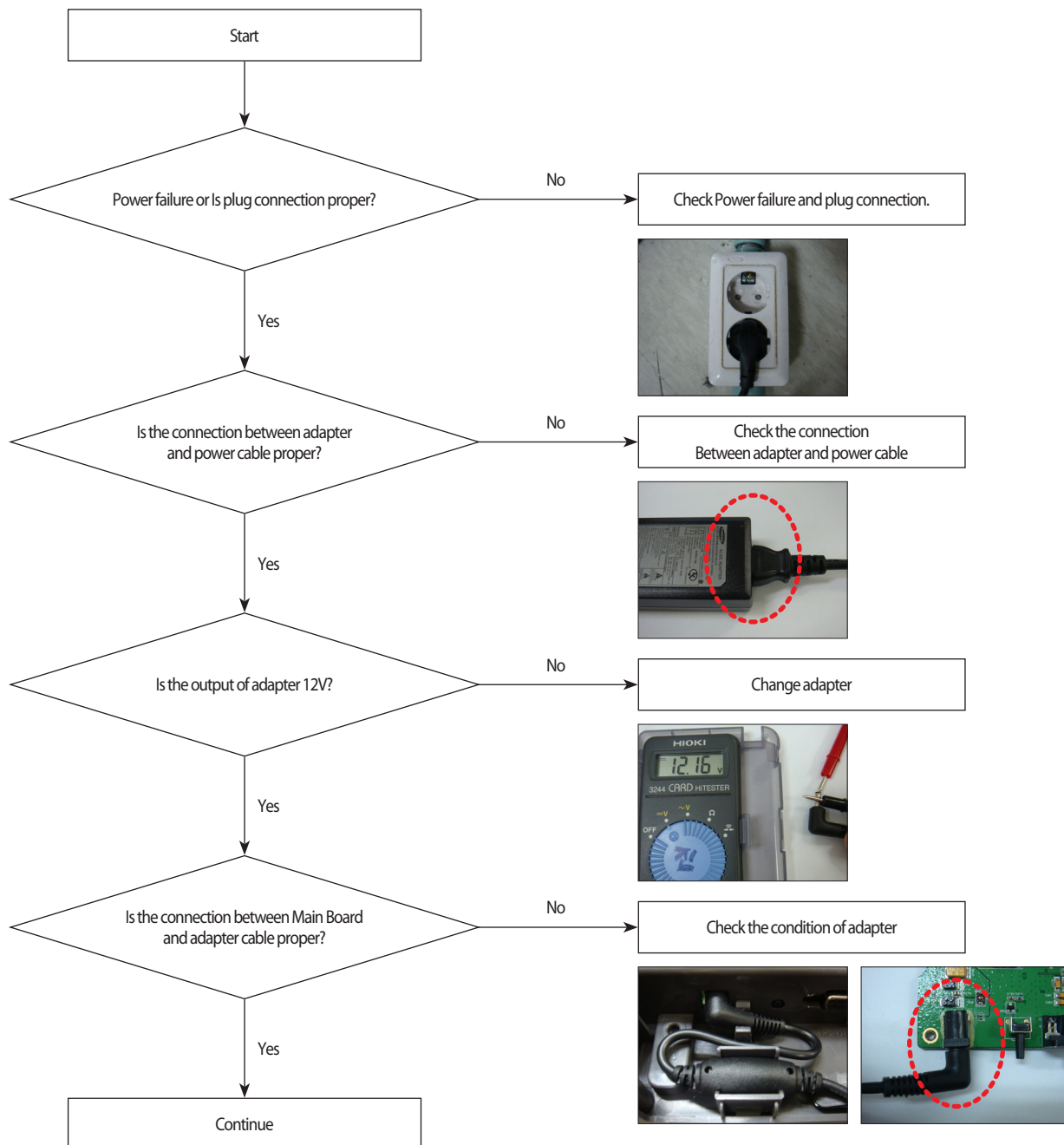
## 5. Troubleshooting

### 5-1. Items to be checked first

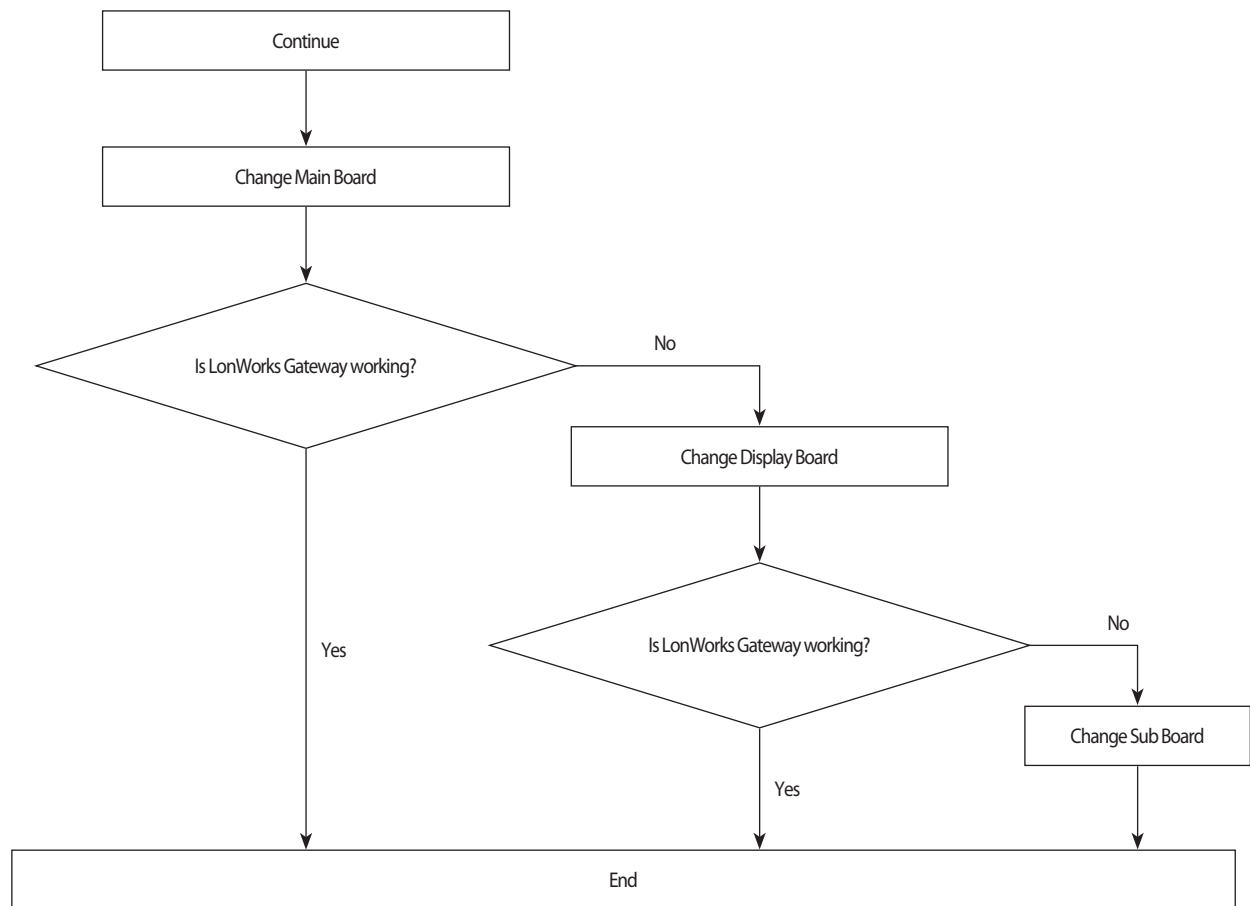
Problem	Check	Explanation / Solution
LonWorks Gateway.0 does not work	Power failure?	After checking power line of each devices, try again.
	Is there communication problem between LonWorks Gateway.0 and other control units?	After checking communication line of each devices, try gain.
	Is the connection between adapter and power cable correct?	After checking connection between adapter and power cable, try again.
Can't access Log-in page	Is the Silverlight 2.0 version installed?	You can download Silverlight 2.0 version at <a href="http://www.microsoft.com/silverlight/">http://www.microsoft.com/silverlight/</a> .
	Is the Windows XP SP2 installed?	Silverlight 2.0 version can run properly under Windows XP SP2. Under previous OS version, Silverlight 2.0 version cannot run properly.
Can't access Log in page From external PC	Is the setting value for netwkor correct?	You should consult with network manager.
	Isn't firewall set in local computer?	
Not monitoring centralized control unit	Are the communication cables of LonWorks Gateway(C1, C2) properly connected?	Connect LonWorks Gateway communication cables (C1, C2) properly. Be careful to deal with the RS485 communication cable because it has polarity.
Peak power management is out of order	Are there no problems on power line of LonWorks Gateway?	If there is problem on power line of LonWorks Gateway, Peak power management function cannot operate properly.
Forget the IP address of LonWorks Gateway.0	At initial display, press [Menu] button and then "1. IP config" message will be displayed. Under that condition press [Set] button.	The IP address of LonWorks Gateway is initialized at 192.168.0.100 when factory out.
Indoor units are out of order	Is Peak Power management or schedule control running?	According to schedule control and power management, indoor units can be turned it on or off.
	Is LonWorks Gateway system time different from current time?	Set time of LonWorks Gateway, according to real time.
External digital inputs are out of order	Is the external circuit constituted?	Check additional circuit for external input control function of LonWorks Gateway.
	Is the contact control pattern of LonWorks Gateway set to 1?	Set the pattern which fits to the control pattern you want.
Tracking Fail	Isn't there any indoor units?	LonWorks Gateway is unsuccessful in tracking. Try it again.

## 5-2. Fault diagnosis by symptom

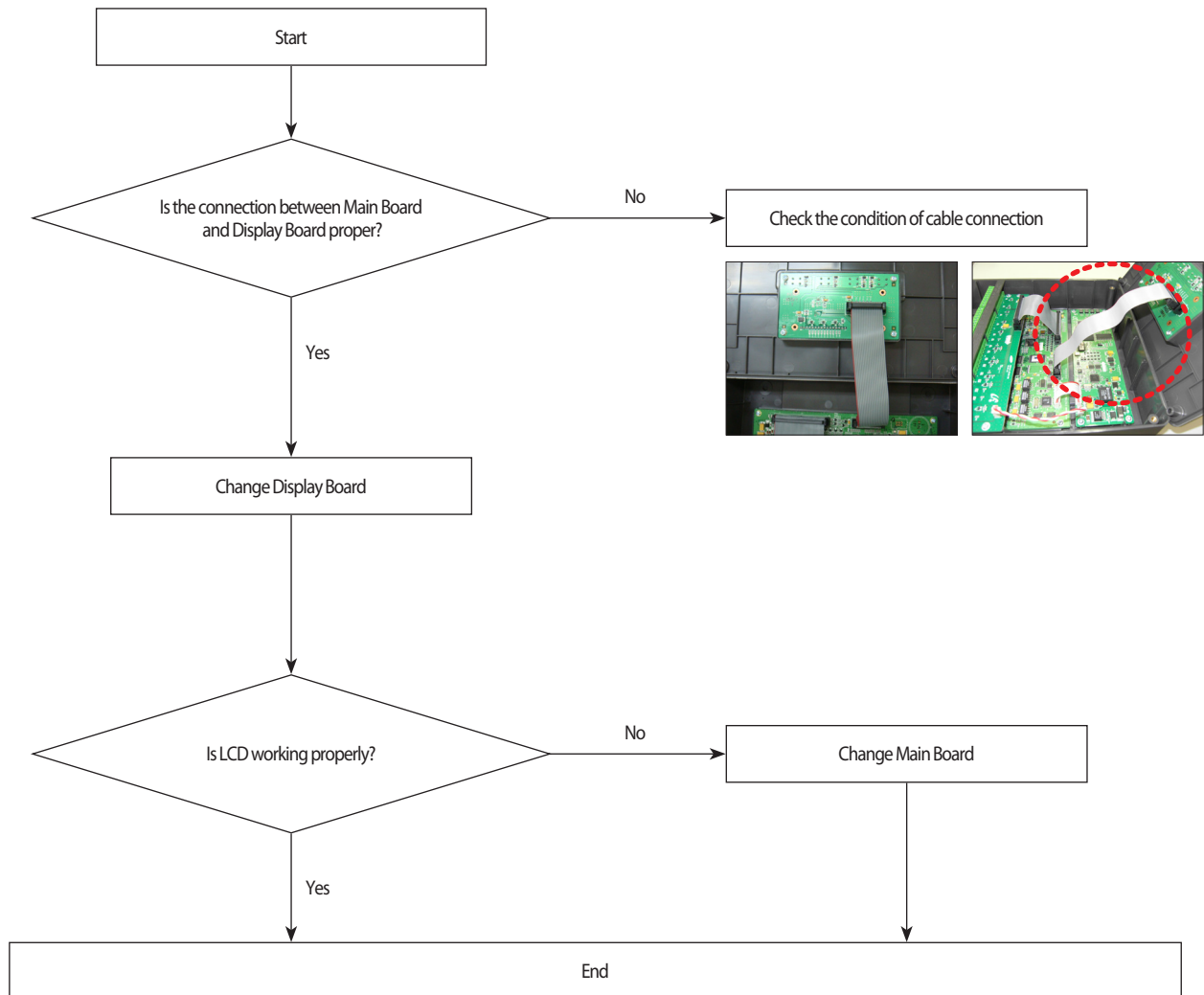
### 5-2-1. When LonWorks Gateway is not working



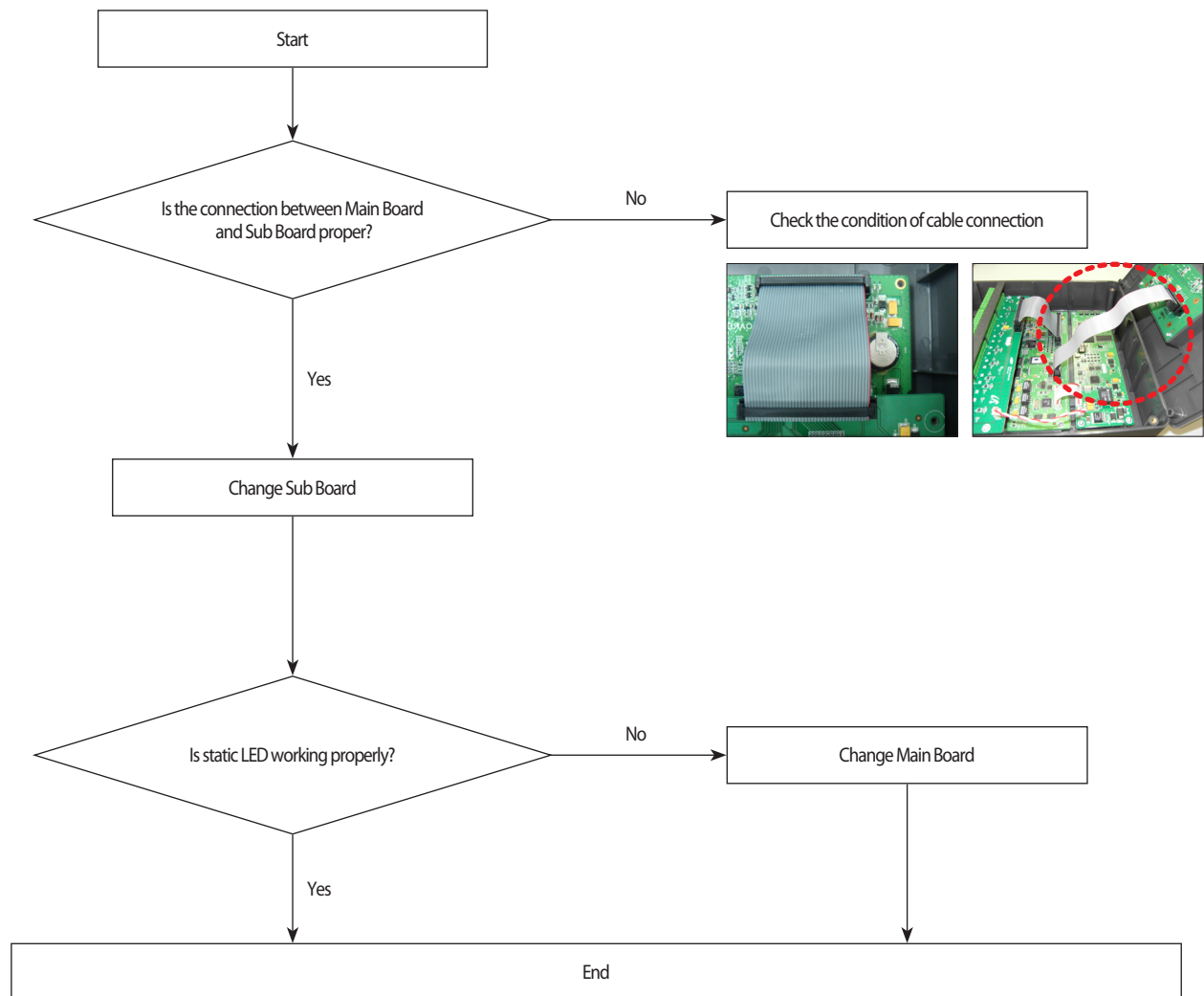
## When LonWorks Gateway is not working(cont.)



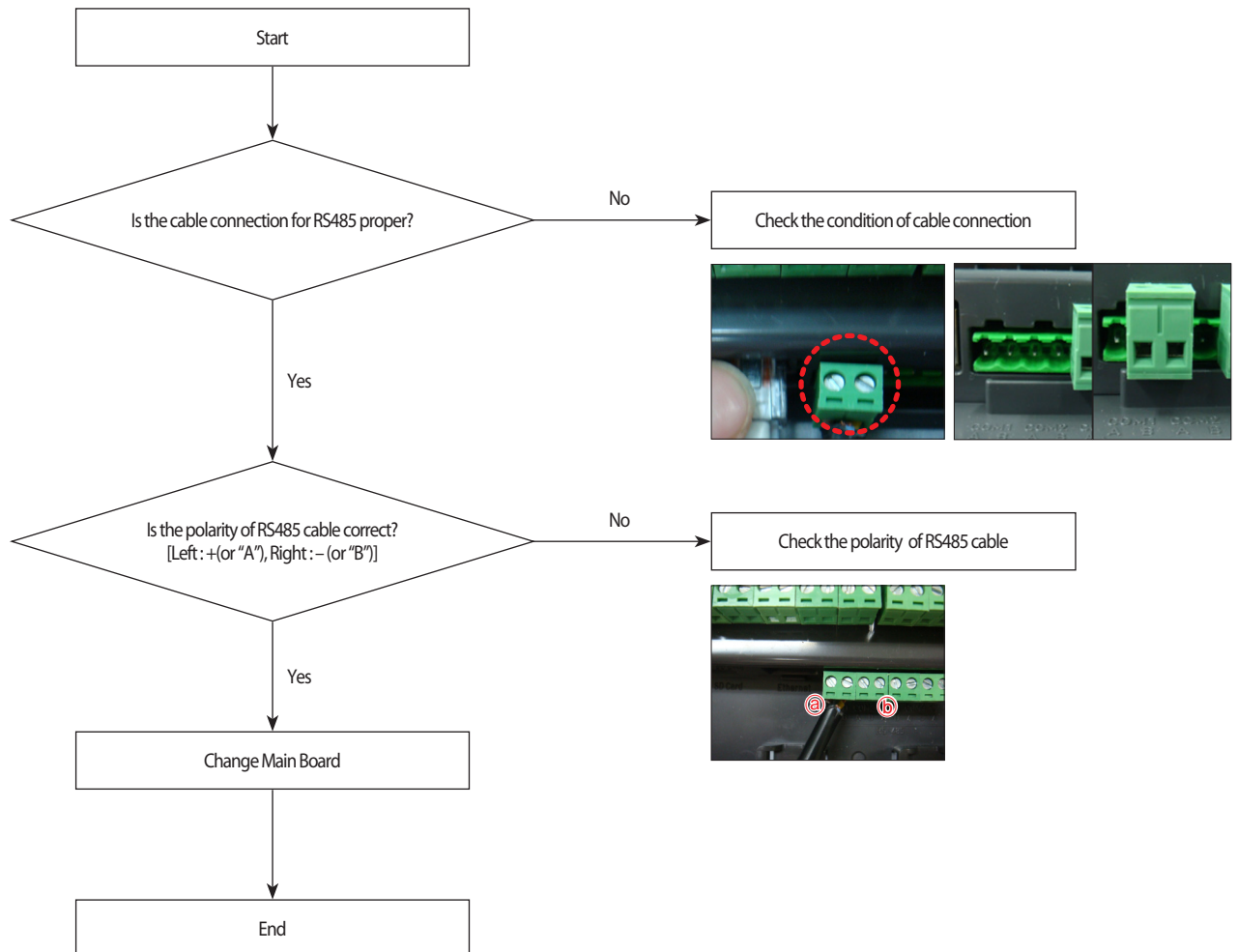
## 5-2-2. When the LCD Display is Not Working or the Backlight is Turing OFF



### 5-2-3. When the Static LED is Not Turning ON/OFF

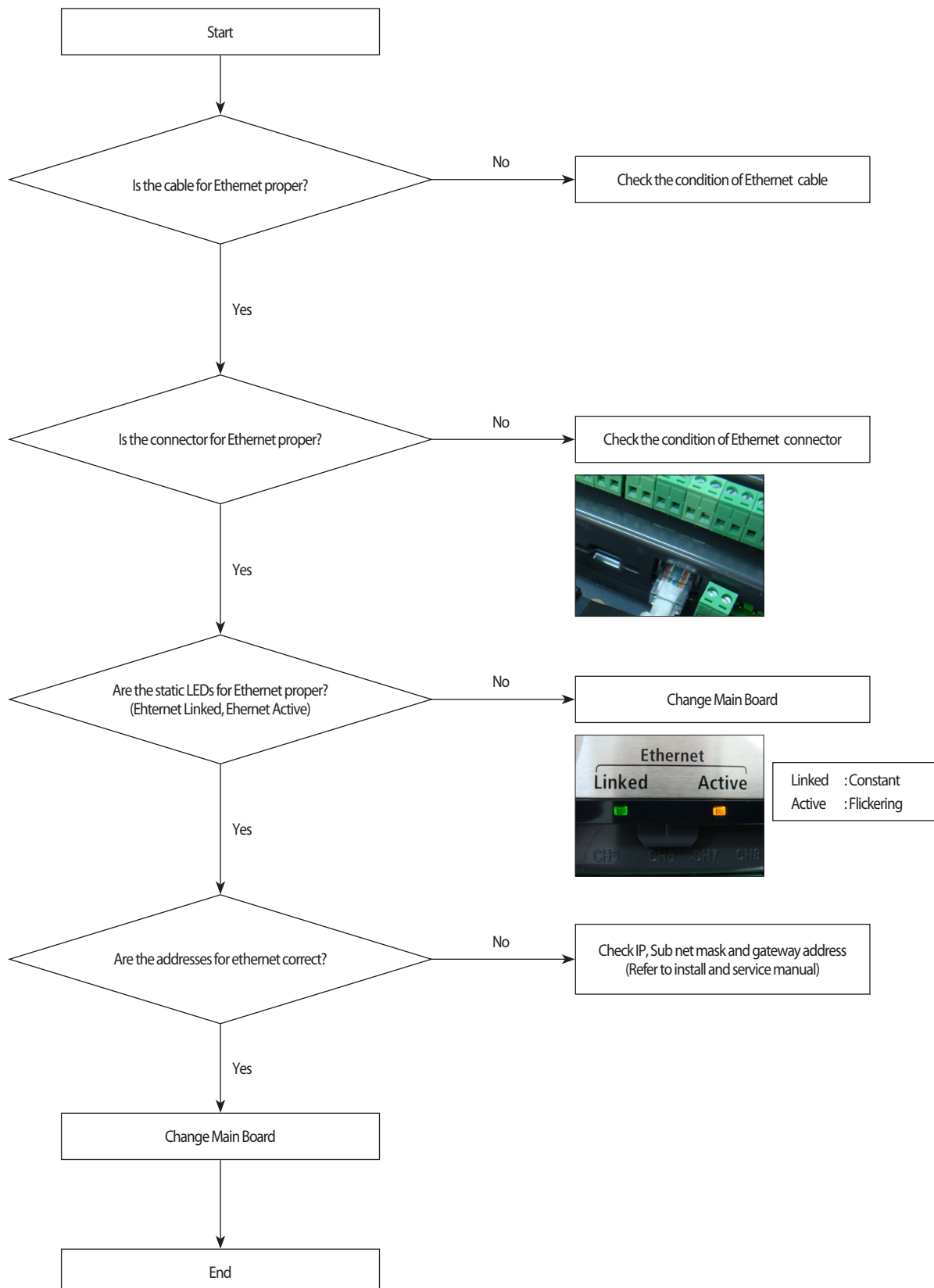


## 5-2-4. When the RS485 is Not Connecting

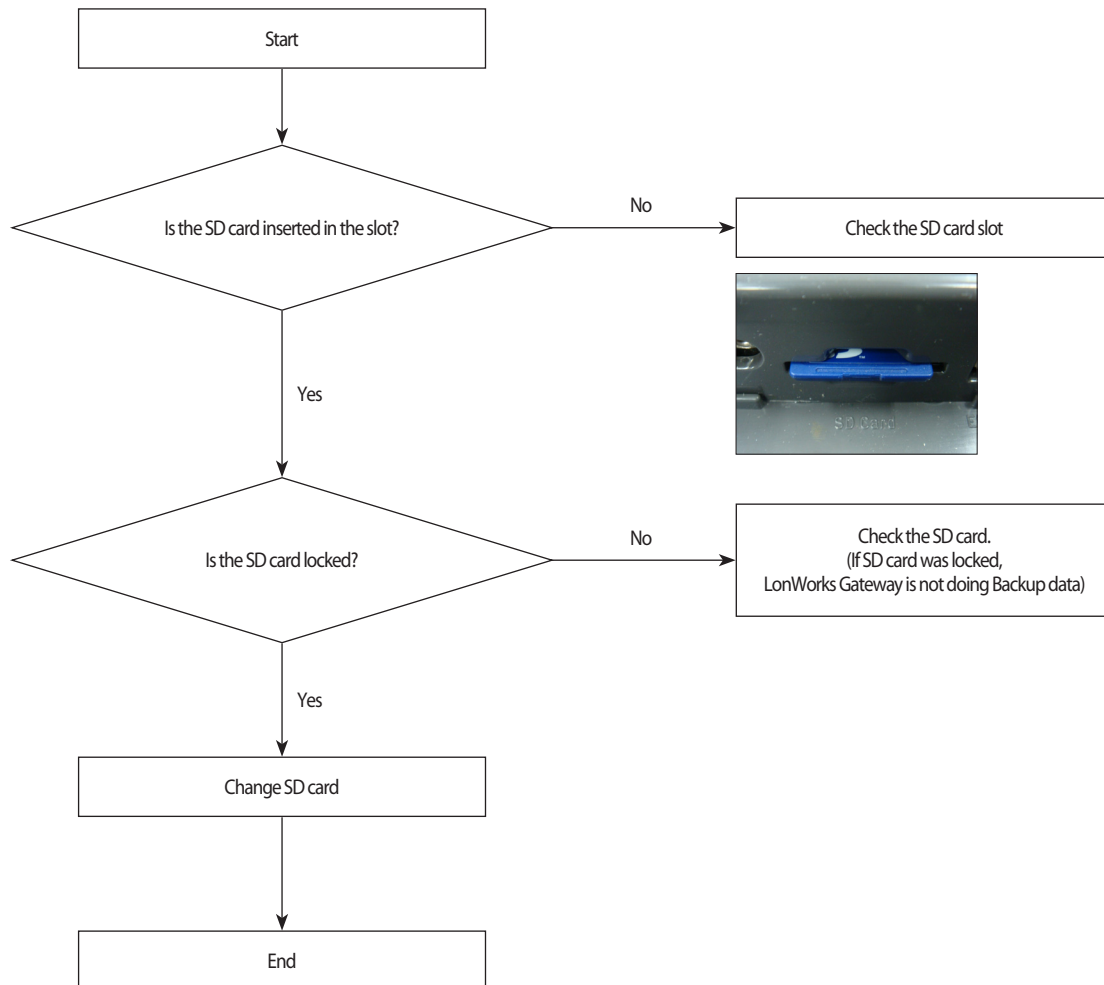




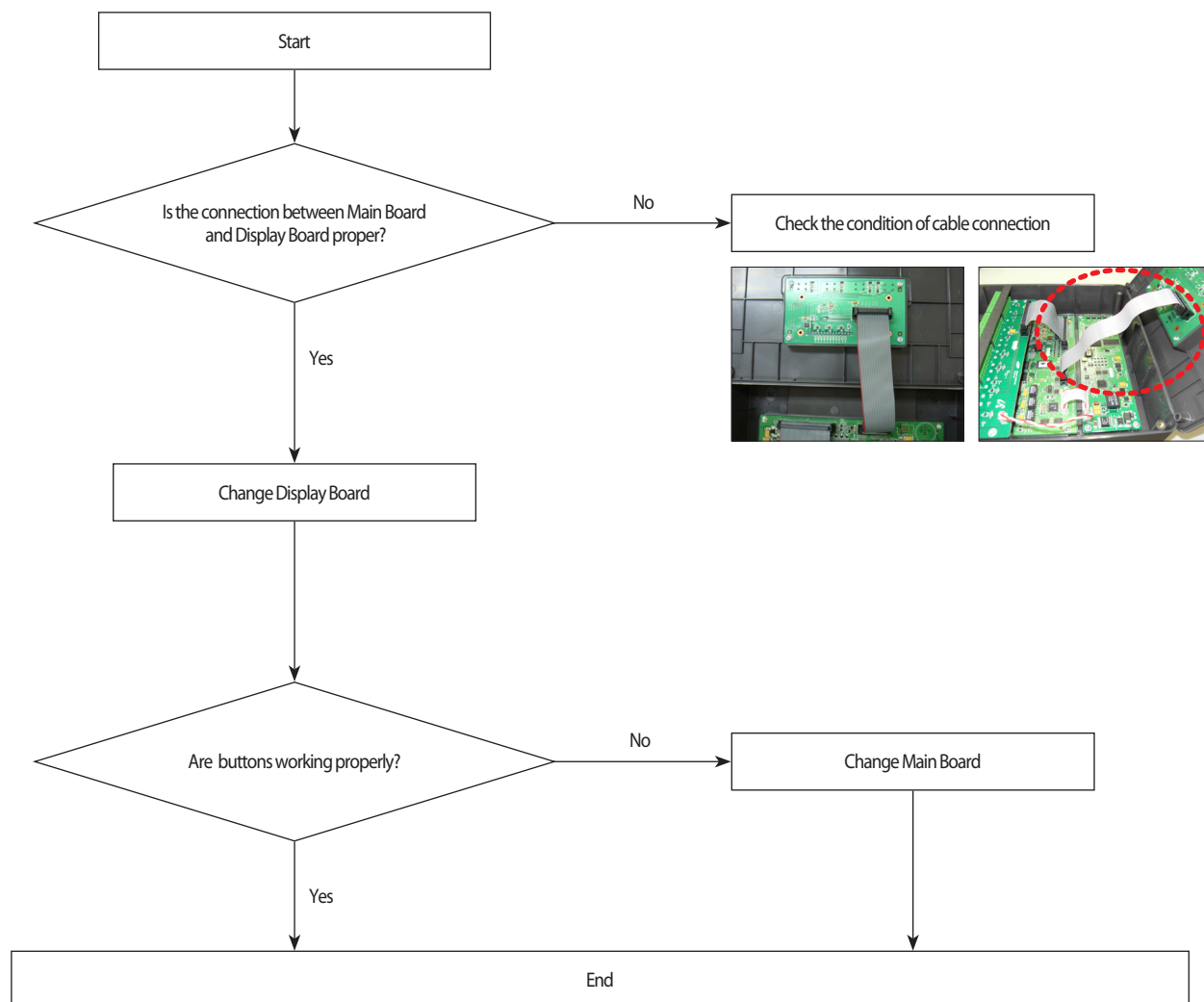
## 5-2-5. When the Ethernet is Not Connecting



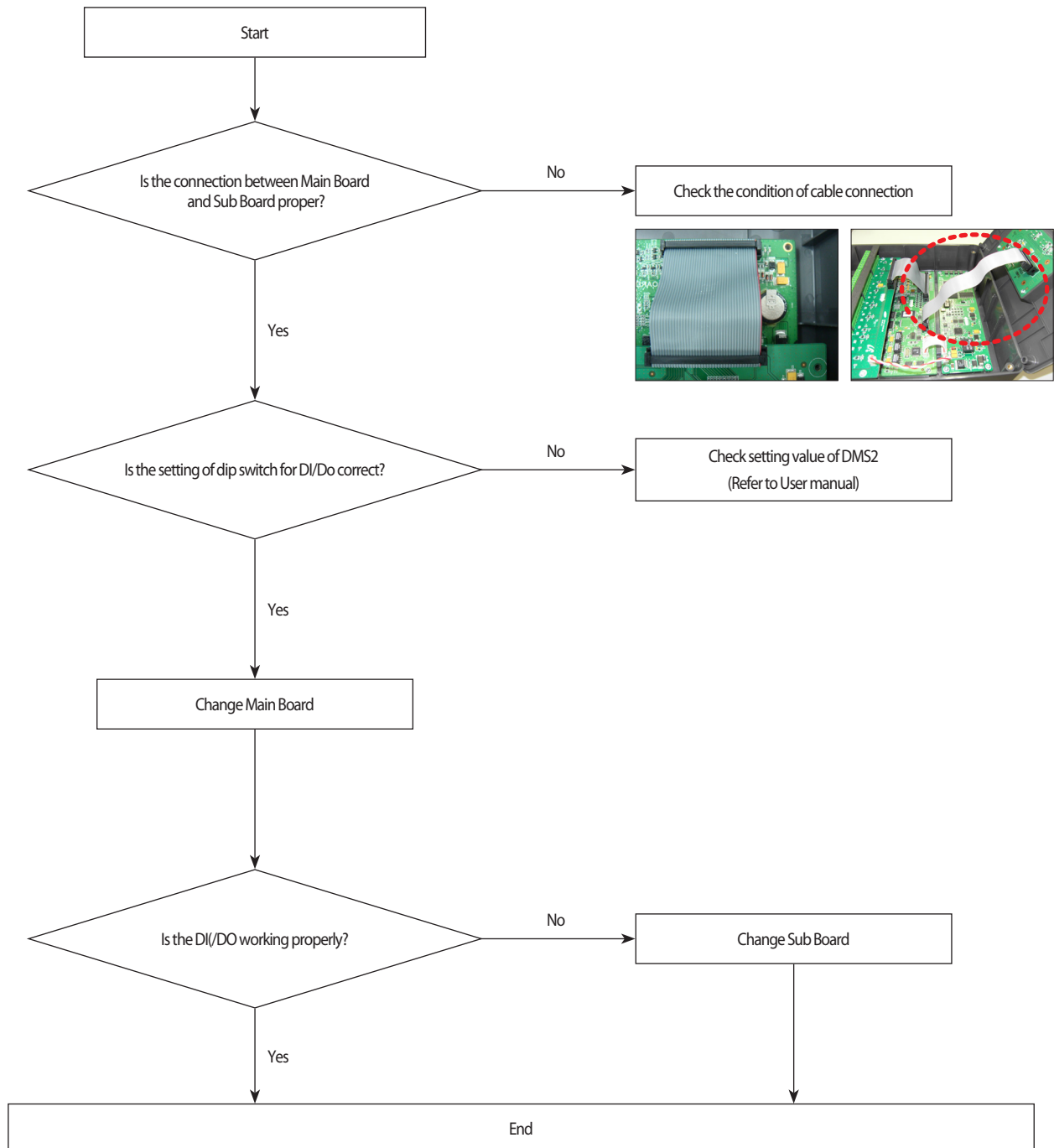
## 5-2-6. When the SD Card is Not Doing Backup Data



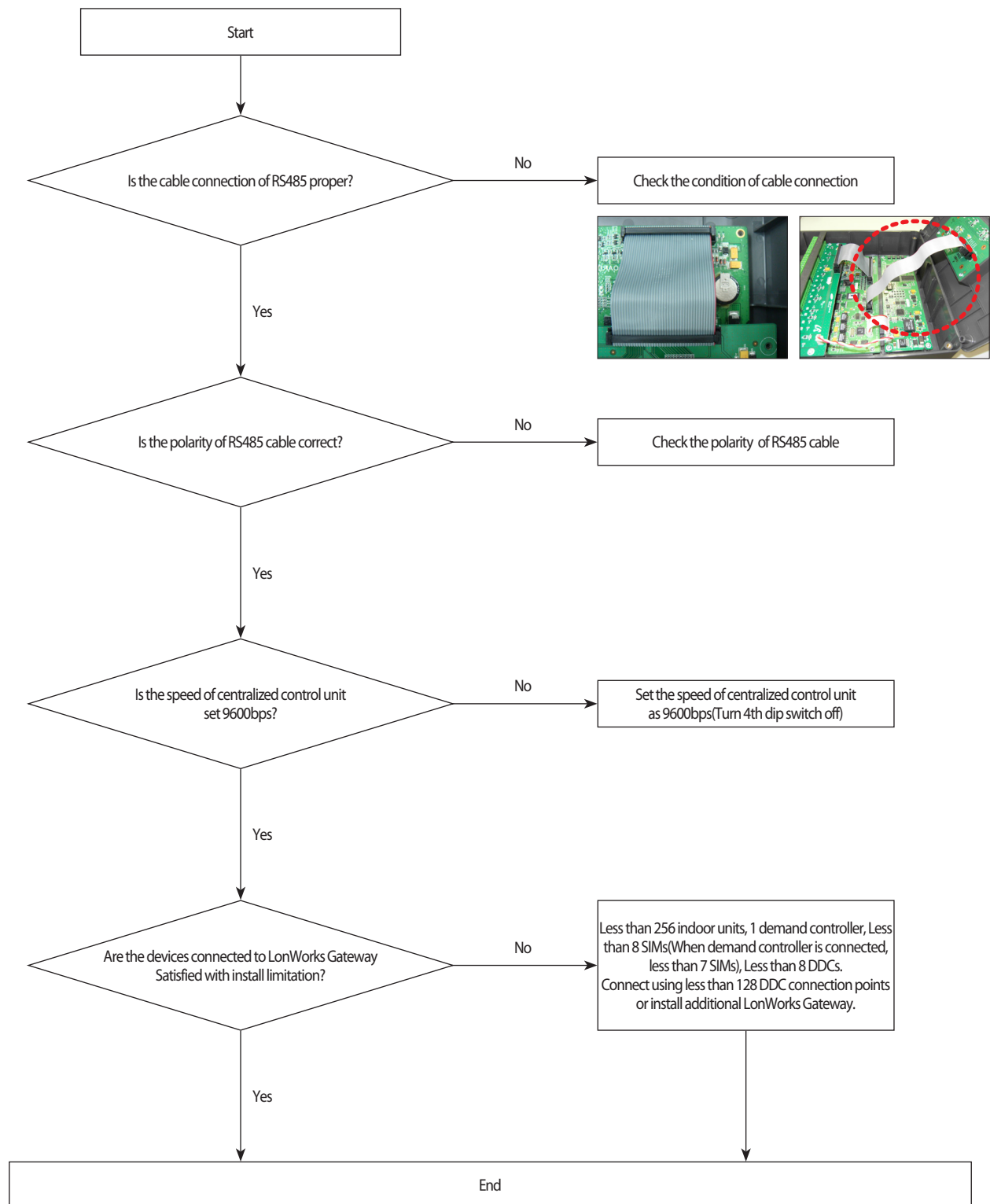
## 5-2-7. When the Button is Not Working



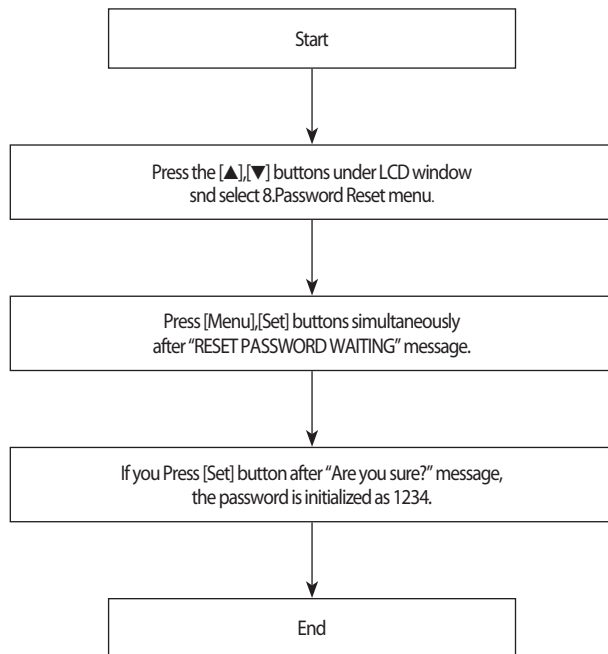
## 5-2-8. When the DI/Do is Not Working



## 5-2-9. Action when the Tracking Error



## 5-2-10. Initialization Way when Admin Password is forgotten

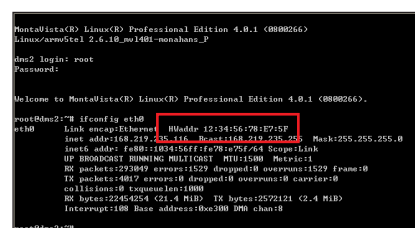
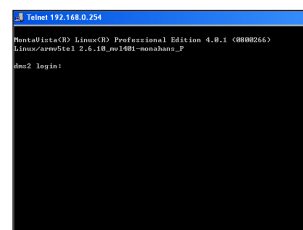
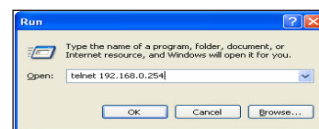
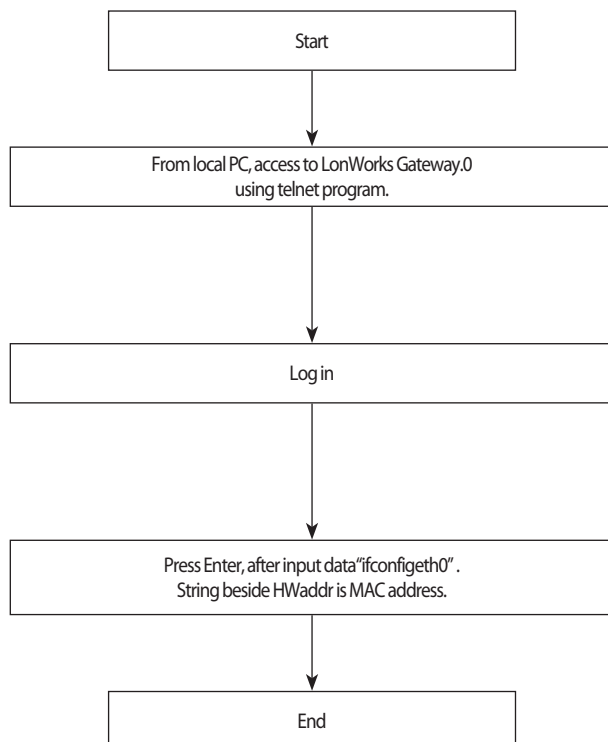


RESET PASSWORD  
WAITING.....

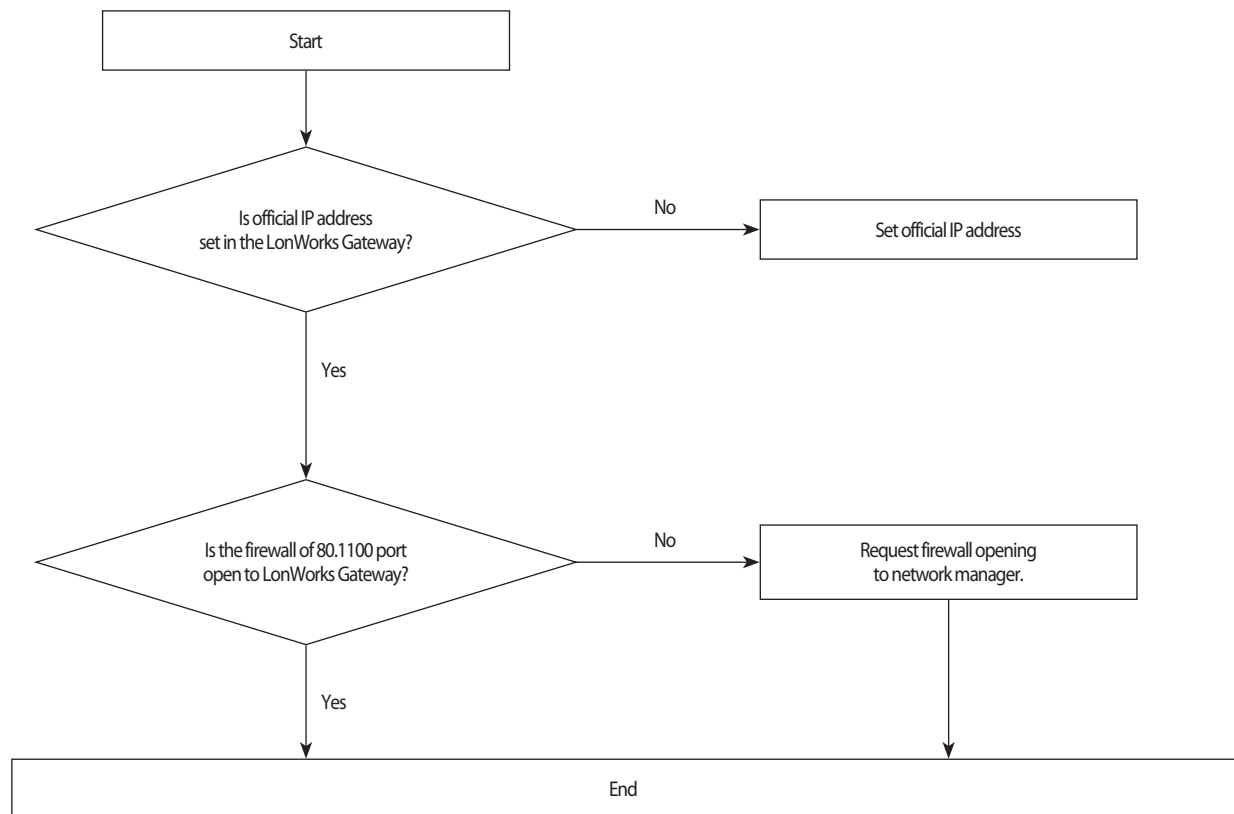
RESET PASSWORD  
WAITING.....

Are you sure?  
YES:Set, NO:Menu

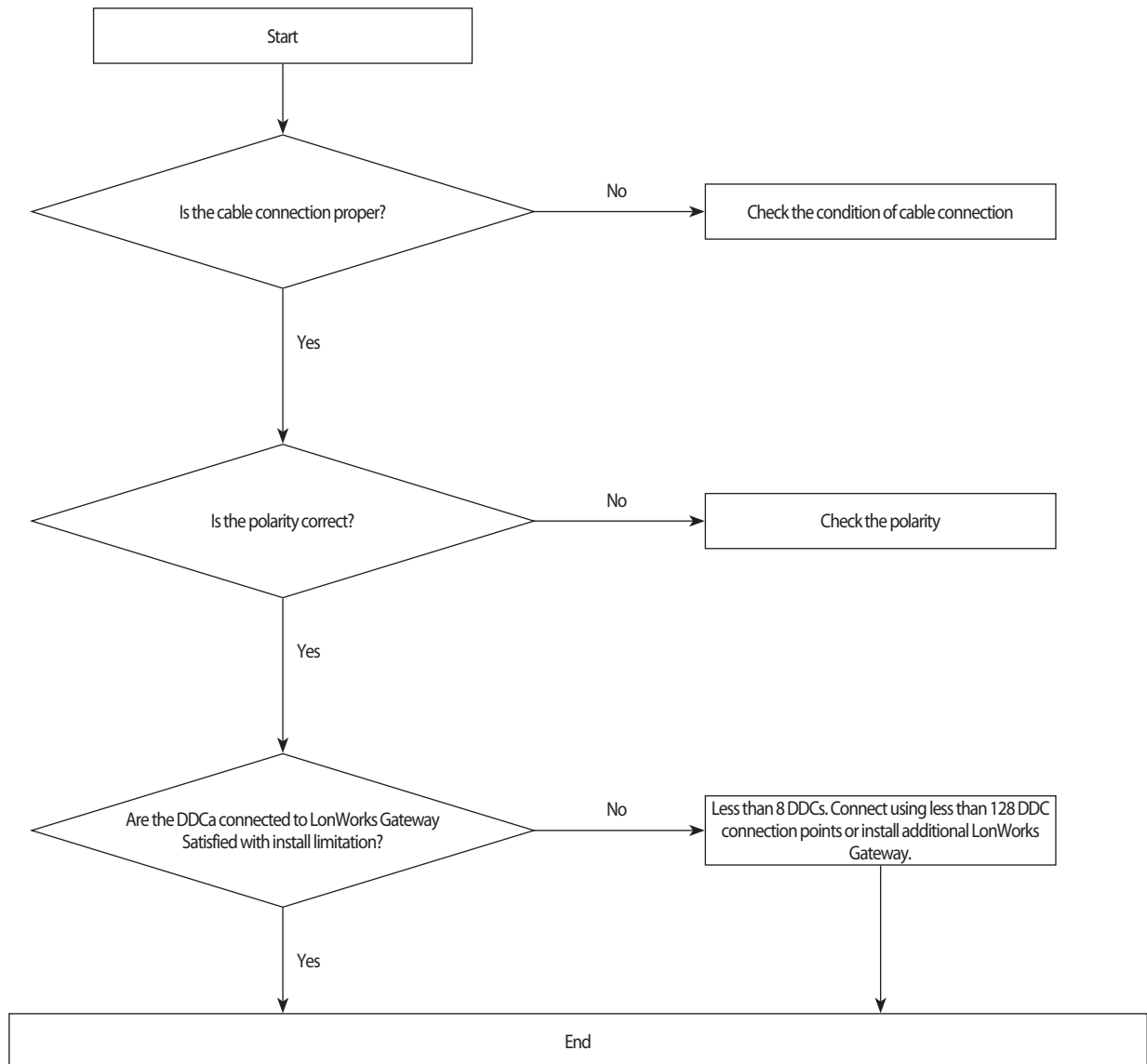
## 5-2-11. How to know MAC address



## 5-2-12.If the connection to LonWorks Gateway from the outside using internet is not working

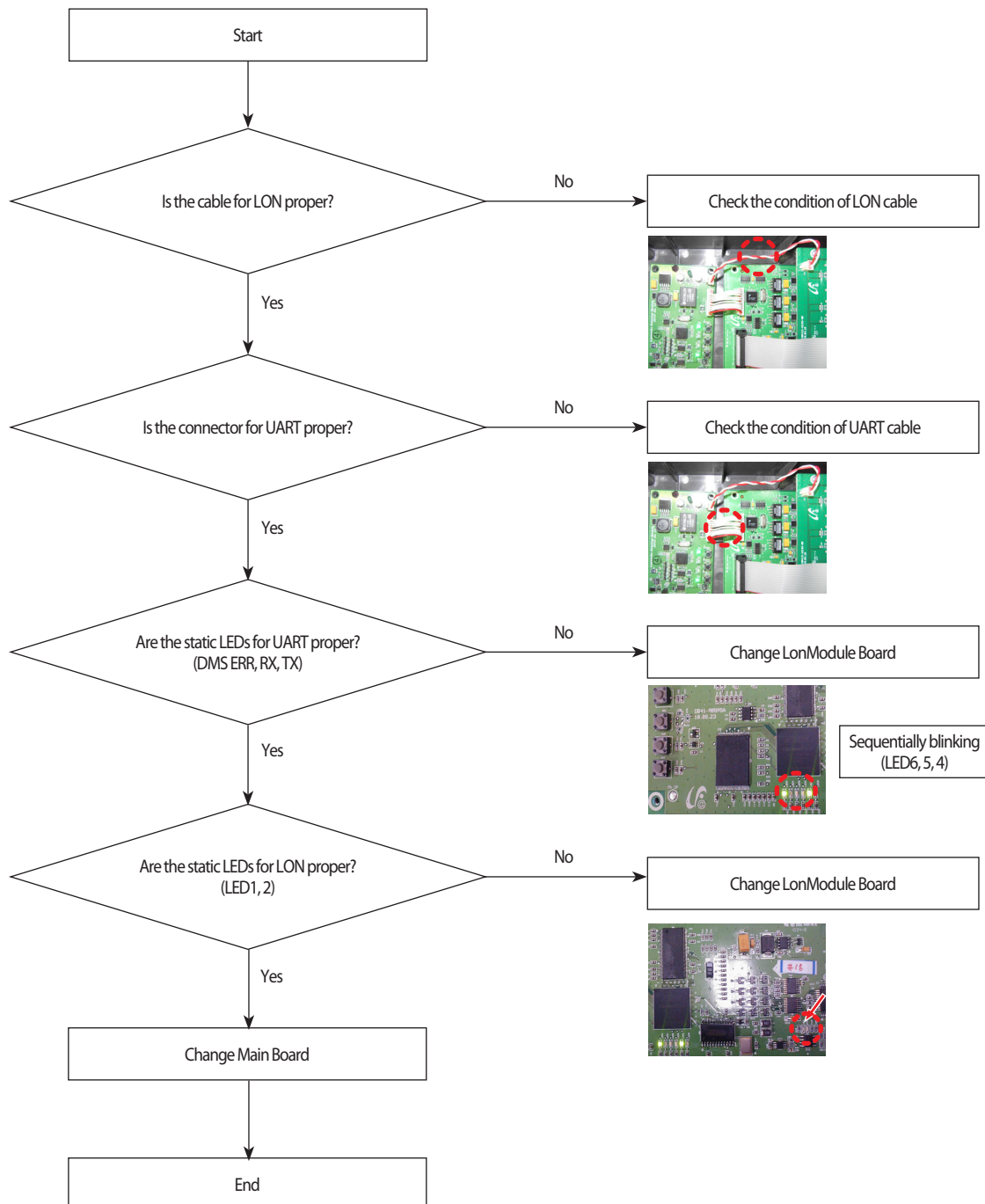


### 5-2-13. Solution for DDC connection error

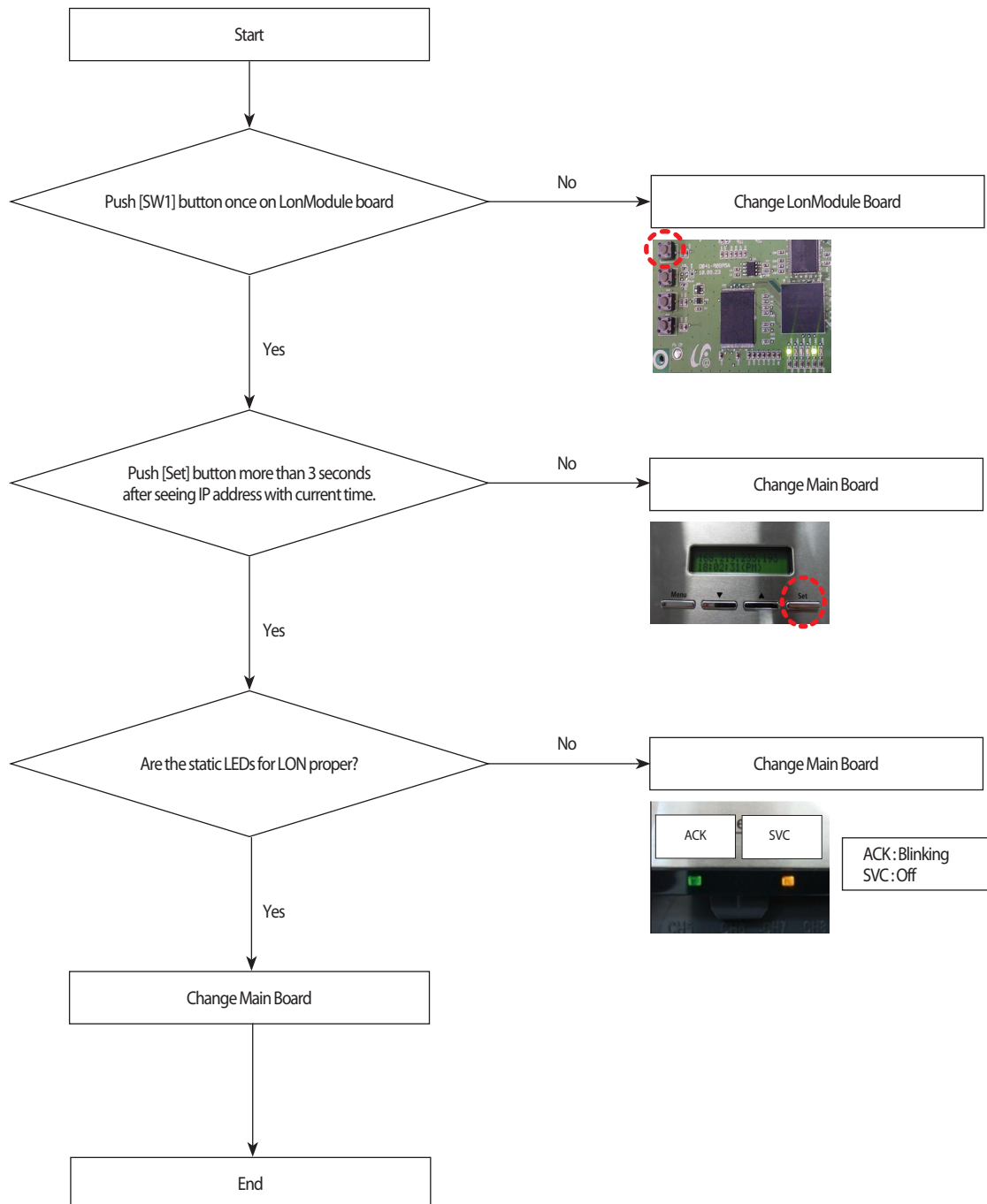




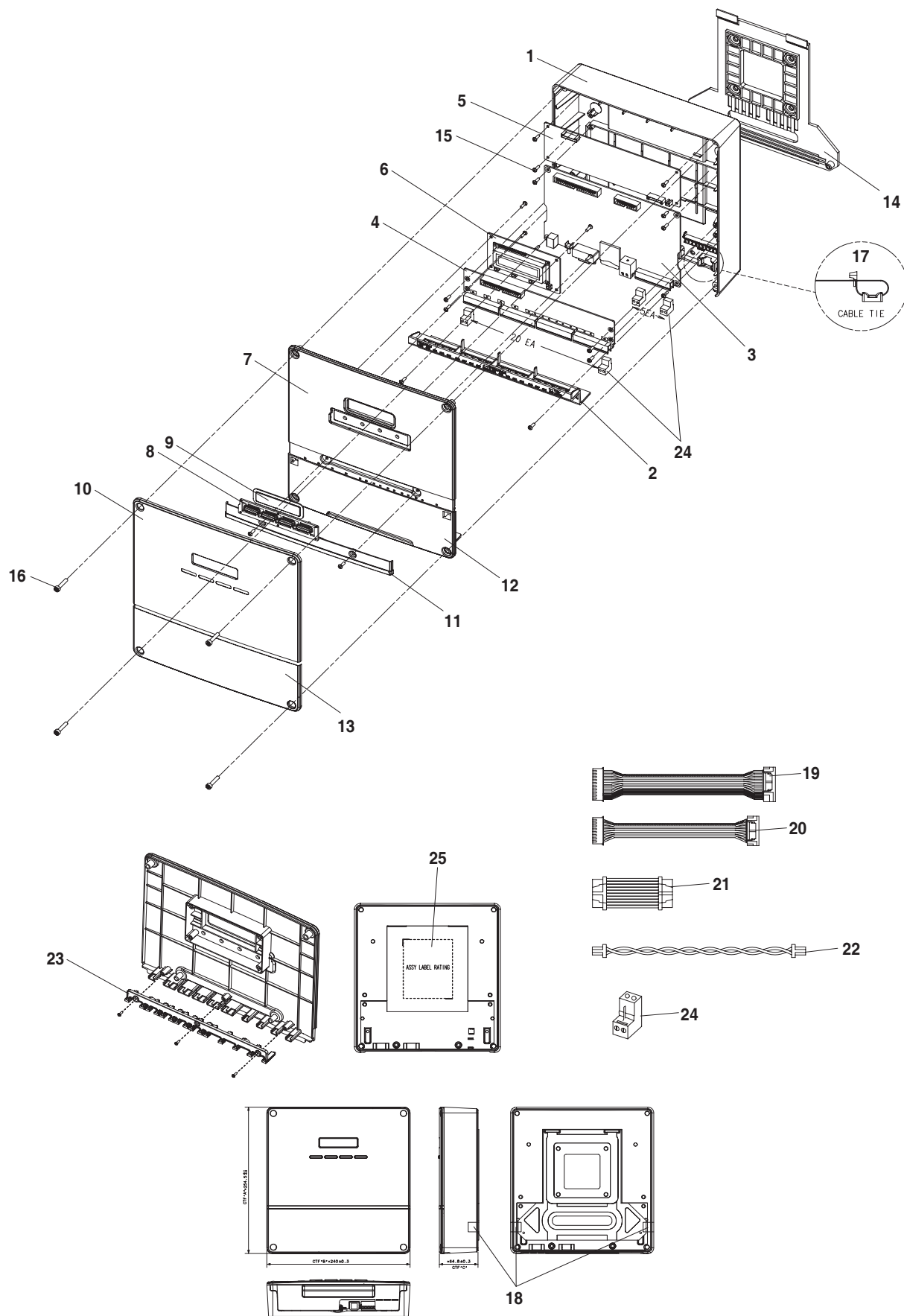
## 5-2-14. When the LonWorks Data is Not Updating



## 5-2-15. When the LonWorks Commit is Not Working



## 6. Exploded Views and Part List

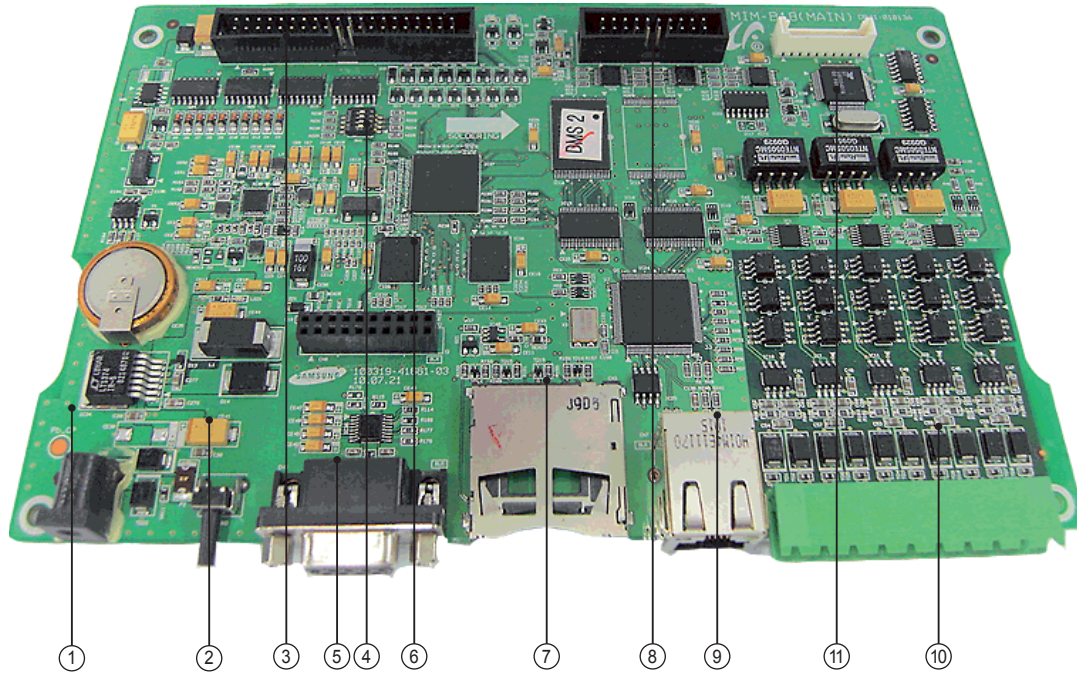


## ■ Parts List

[illegible]

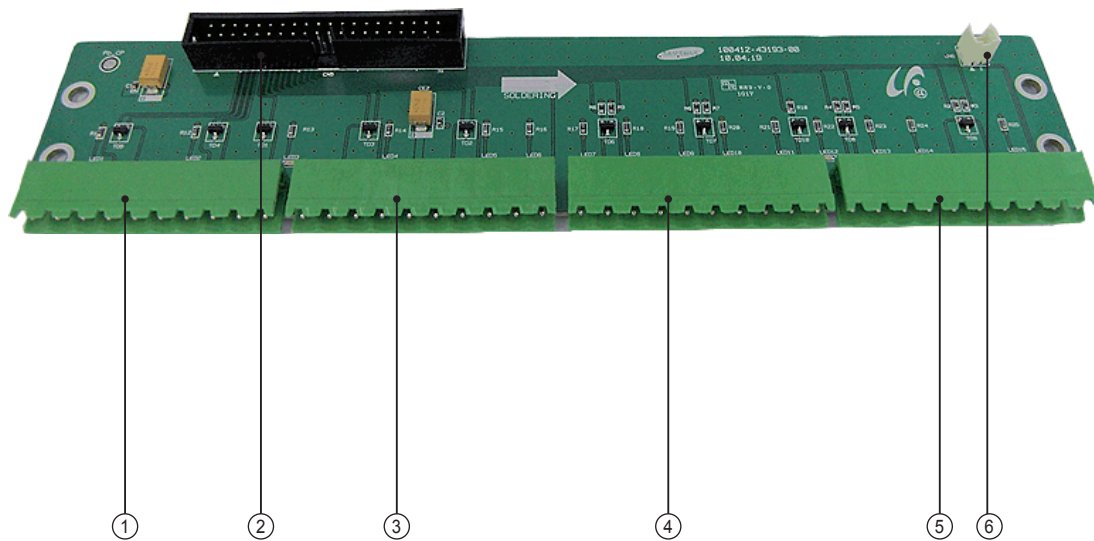
## 7. PCB Diagram

### 7-1. Main Board



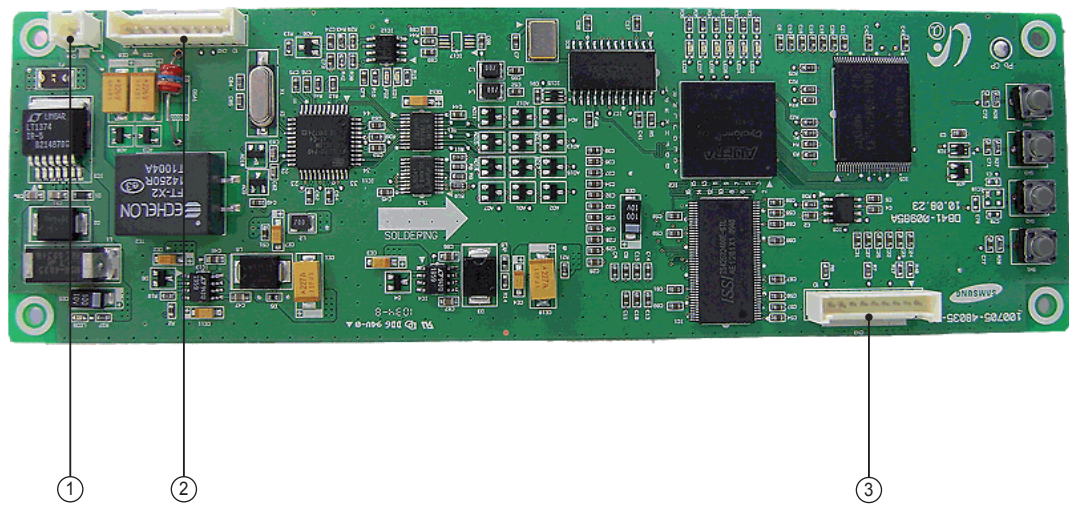
<p>① <b>CN5 : Power connector</b></p> <p>#1: GND #2: Not Connect #3: DC12V</p>	<p>② <b>SW2 : Manual Reset</b></p> <p>#1: GND #2: Reset signal</p>	<p>③ <b>CN2 : Main-Sub Connector</b></p> <p>#1,2: DC12V #3,4,27: GND #5~#14: DI_1~DI_10 #15~#23: DO_1~DO_9 #24: Not Connect    #25: DC3.3V #26: CUP_ALIVE    #28: ETH_ALIVE #29: ETH_LINK    #30: ERROR #31, 33, 35, 37, 39: 485_TX LED(1ch~5ch) #32, 34, 36, 38, 40: 485_RX LED(1ch~5ch)</p>	<p>④ <b>SW1 : Mode Sel SW</b></p> <p>#1: MODE_SEL1 #2: MODE_SEL2 #3: MODE_SEL3 #4: MODE_SEL4 #5~#8: GND(Pull down)</p>
<p>⑤ <b>CN6 : Serial Connector</b></p> <p>#1, 4, 6~9: Not Connect #2: TXR #3: RXR #5: GND</p>	<p>⑥ <b>CN8 : Debug Connector</b></p> <p>#1, 2: DC3.3V #3: nTRST #4, 6, 8, 10, 11, 12, 14, 16, 18, 20: GND #5: TDI #7: TMS    #9: TCK #13: TDO    #15: CPU_nRESET #17, 19: Not Connect</p>	<p>⑦ <b>CN3 : SD CARD Connector</b></p> <p>#1: SD_D3 #2: SD_DMD #3, 6, 11: GND    #4: DC3.3V #5: SD_CLK    #7: SD_D0 #8: SD_D1    #9: SD_D2 #10: SD_nCD    #13: SD_WP</p>	<p>⑧ <b>CN1 : Display Connector</b></p> <p>#1, 2: DC5V    #3, 4, 16: GND #5: CLCD_RS #6: CLCD_RnW #7: CLCD_EN #8~15: CLCD_DB0~7 #17: MENU    #18: UP #19: DOWN    #20: SOK</p>
<p>⑨ <b>CN7 : Ethernet Connector</b></p> <p>#1: TPO+    #2: TPO- #3: TDC(DC3.3V)    #4: Not Used #5: TPI+    #6: TPI- #D2: ETHERNET_LINK #D1: 3.3V(with 24.9 ohm pull up) #D4: ETHERNET_ALIVE #D3: 3.3V(with 24.9 ohm pull up)</p>	<p>⑩ <b>CN4 : RS485 Connector</b></p> <p>#1(+): Ch1 A    #2(-): Ch1 B #3(+): Ch2 A    #4(-): Ch2 B #5(+): Ch3 A    #6(-): Ch3 B #7(+): Ch4 A    #8(-): Ch4 B #9(+): Ch5 A    #10(-): Ch5 B</p>	<p>⑪ <b>CN9 : Main_Lon module Connector</b></p> <p>#1, 2: DC12V    #3: LON_TX #4: LON_RX    #5: LON_SVC #6: RESET #7: Not Connect #8, 9, 10: GND</p>	

## 7-2. Sub Board



<p>① <b>CN4 : DI_Connector</b>  #1, 3, 5, 7, 9: DC12V  #2, 4, 6, 8, 10: DI_1~DI_5</p>	<p>② <b>CN5 : Main-Sub Connector</b>  #1, 2: DC12V  #3, 4, 27: GND  #5~#14: DI_1~DI_10  #15~#23: DO_1~DO_9  #24: Not Connect    #25: DC3.3V  #26: CUP_ALIVE    #28: ETH_ALIVE  #29: ETH_LINK    #30: ERROR  #31, 33, 35, 37, 39: 485_TX LED(1ch~5ch)  #32, 34, 36, 38, 40: 485_RX LED(1ch~5ch)</p>	<p>③ <b>CN3 : DI_Connector</b>  #1, 3, 5, 7, 9: DC12V  #2, 4, 6, 8, 10: DI_6~DI_10</p>	<p>④ <b>CN1 : DO_Connector</b>  #1, 3, 5, 7, 9: DC12V  #2, 4, 6, 8, 10: DO_1~DO_5</p>
<p>⑤ <b>CN2 : DO_Connector</b>  #1, 3, 5, 7: DC12V  #2, 4, 6, 8: DO_6~DO_9  #9, 10: External Lonwork signal</p>	<p>⑥ <b>CN6 : Lonwork Connector</b>  #1, 2: External Lonwork signal</p>		

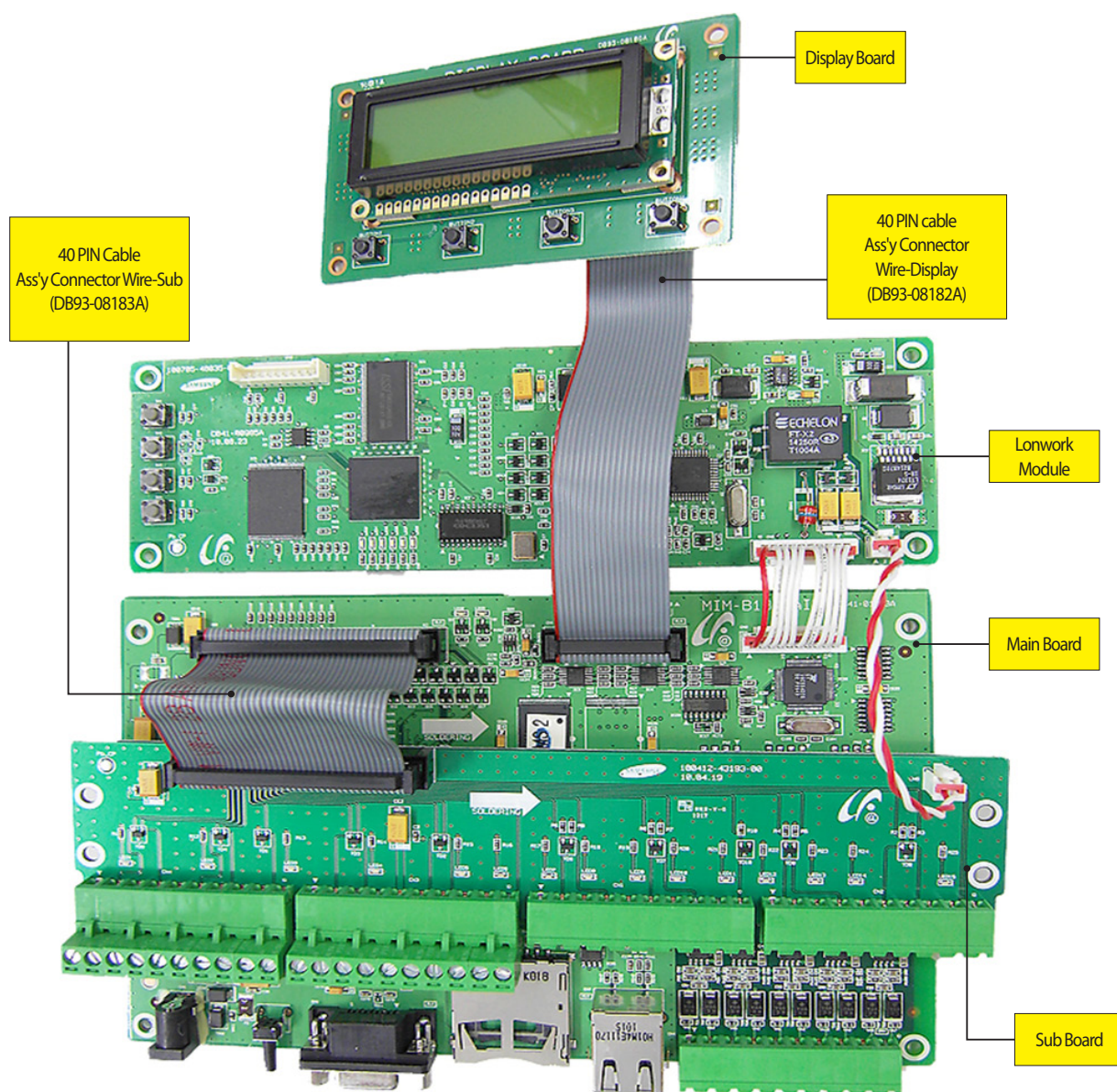
7-3. Lonwork Module



<div>① CN4 : External Lonwork signal Connector</div> <div>#1, 2: Lonwork signal</div>	<div>② CN2 : Module-Main Connector</div> <div>#1, 2, 3: GND #4: Not Connect #5: RESET #6: FTXL_SRV #7: DMS_TX #8: DMS_RX #9, 10: DC12V</div>	<div>③ CN3 : H/W image download Connector</div> <div>#1: TCK #2, 10: GND #3: TDO #4: DC 3.3V #5: TMS #6, 7, 8: Not Connect #9: TDI</div>
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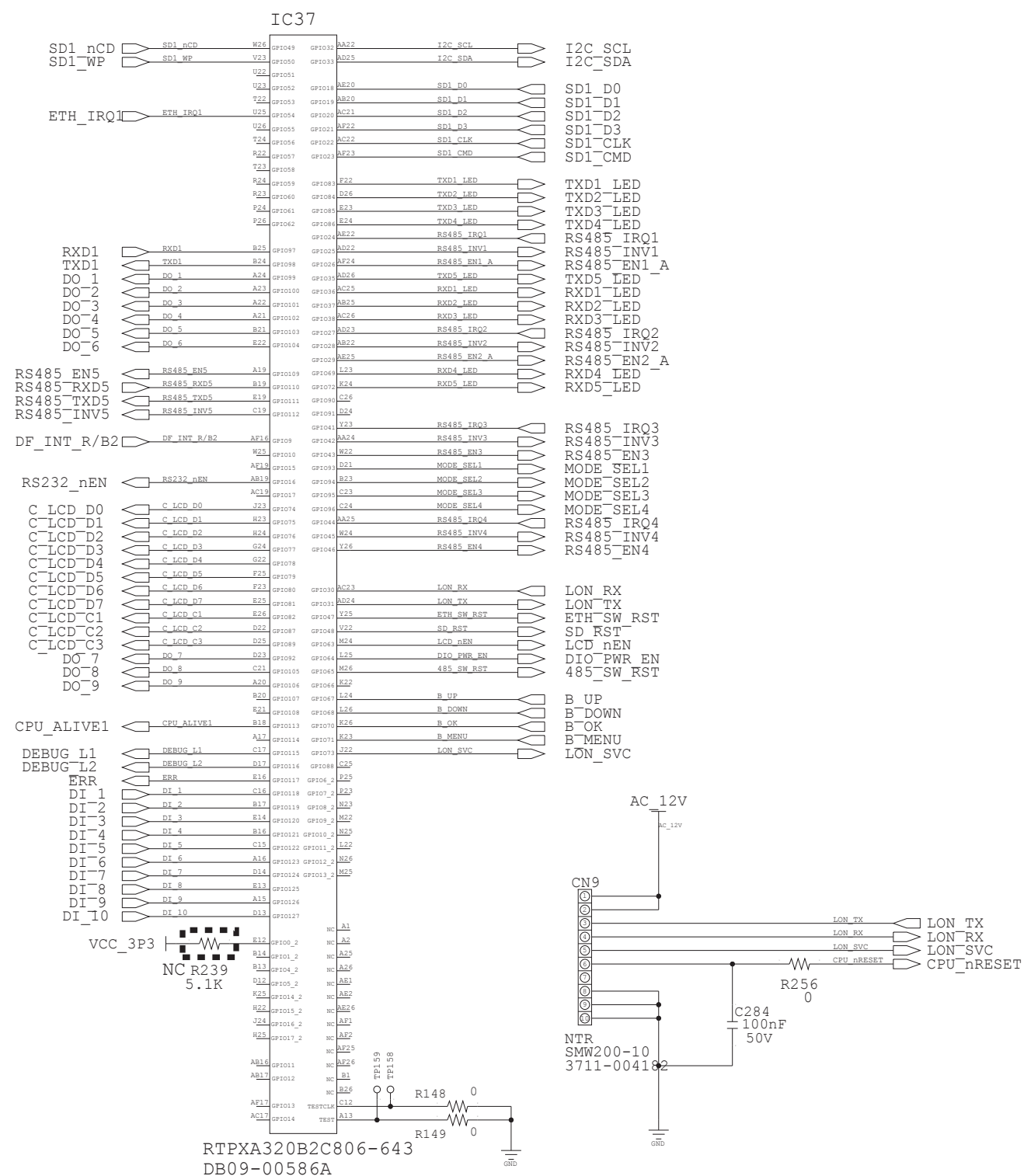
## 8. Wiring Diagram



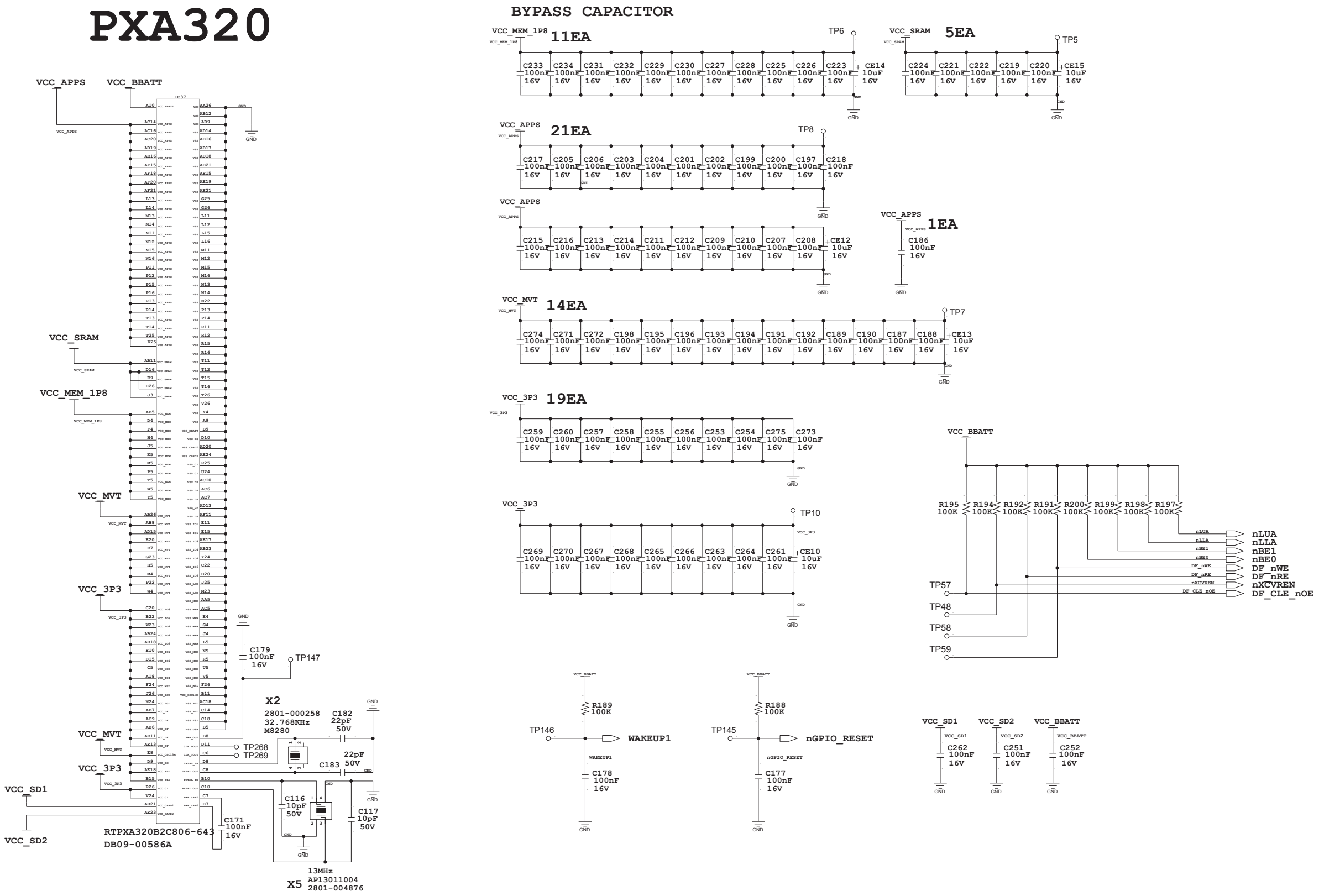
This Document can not be used without Samsung's authorization.



## 9-1. Main Board

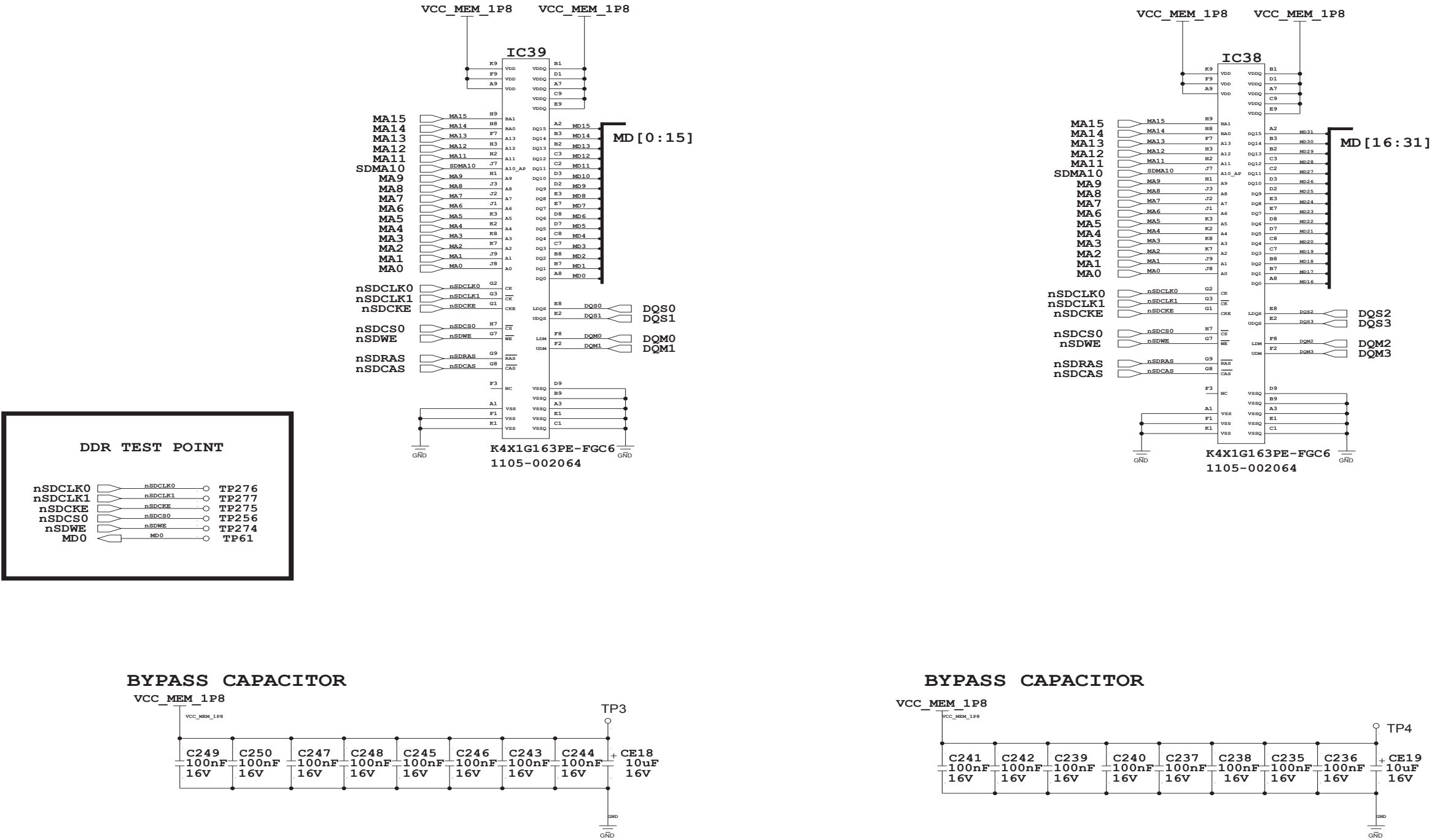
[illegible]

Main Board(cont.)



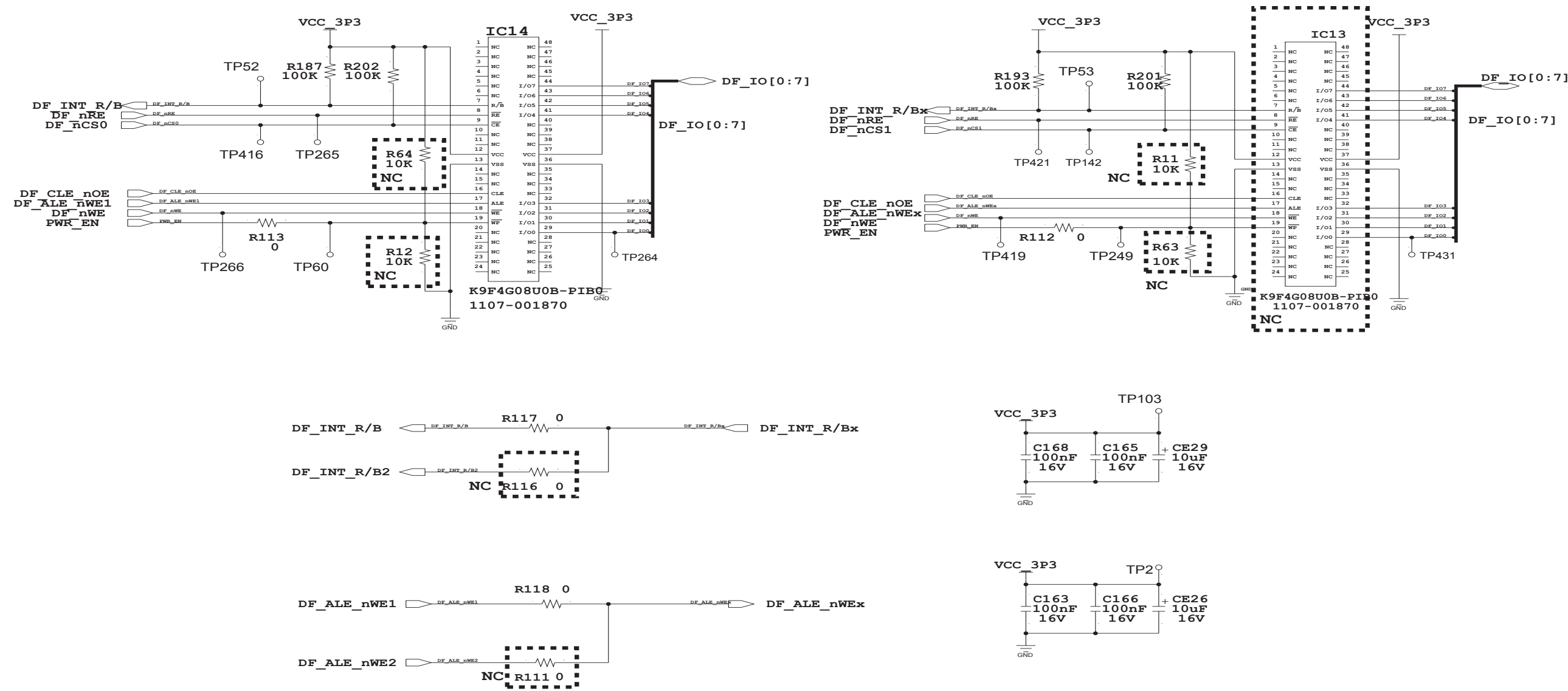
Main Board(cont.)

Mobile DDR SDRAM (256MB)



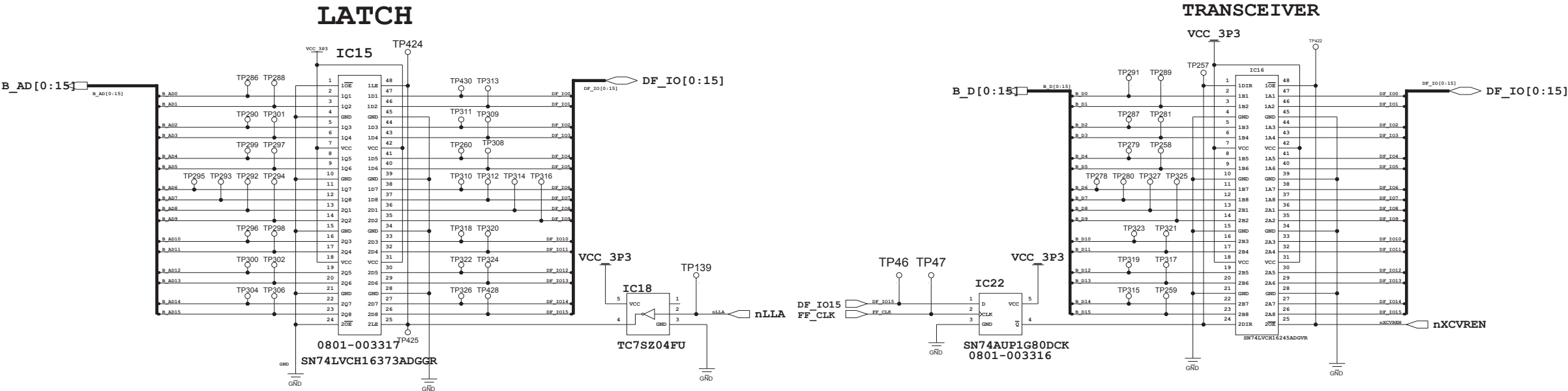
Main Board(cont.)

512MBx2 NAND FLASH

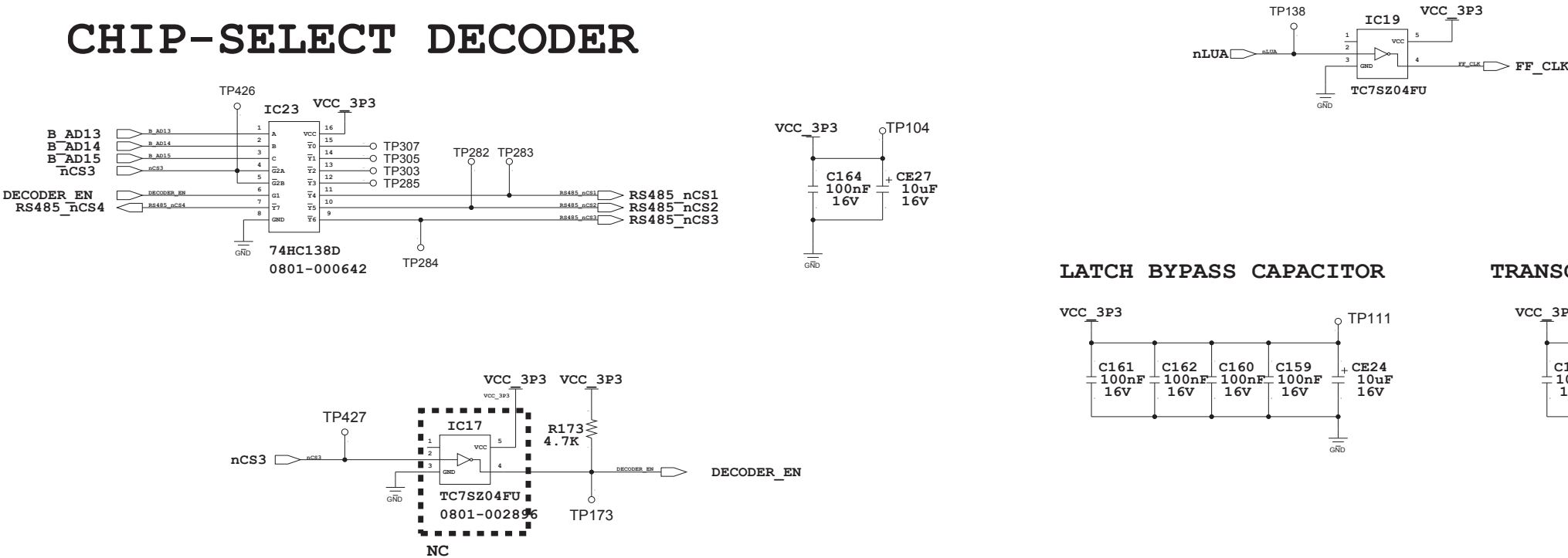


Main Board(cont.)

LATCH & TRANSCEIVER for VLIO

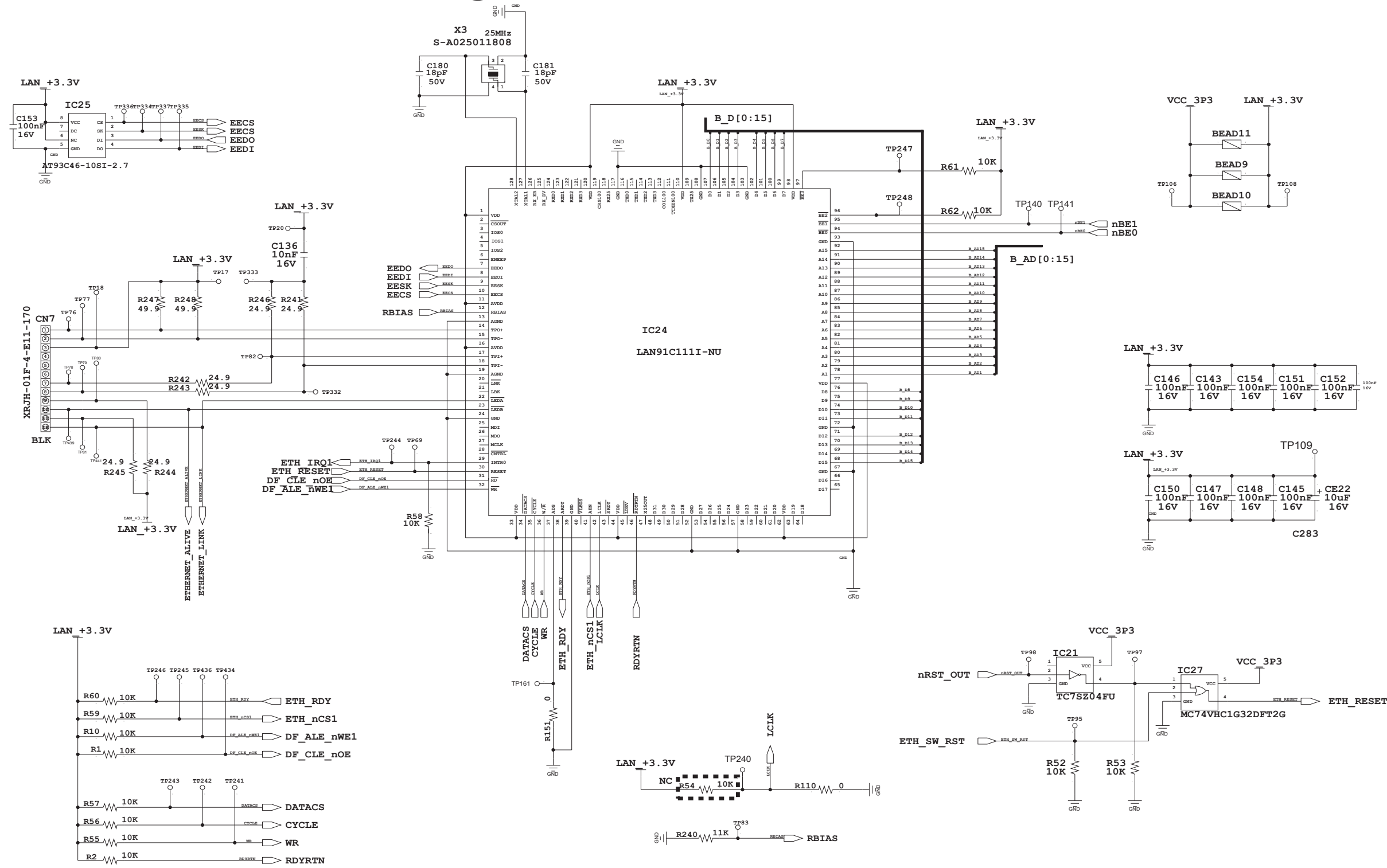


CHIP-SELECT DECODER



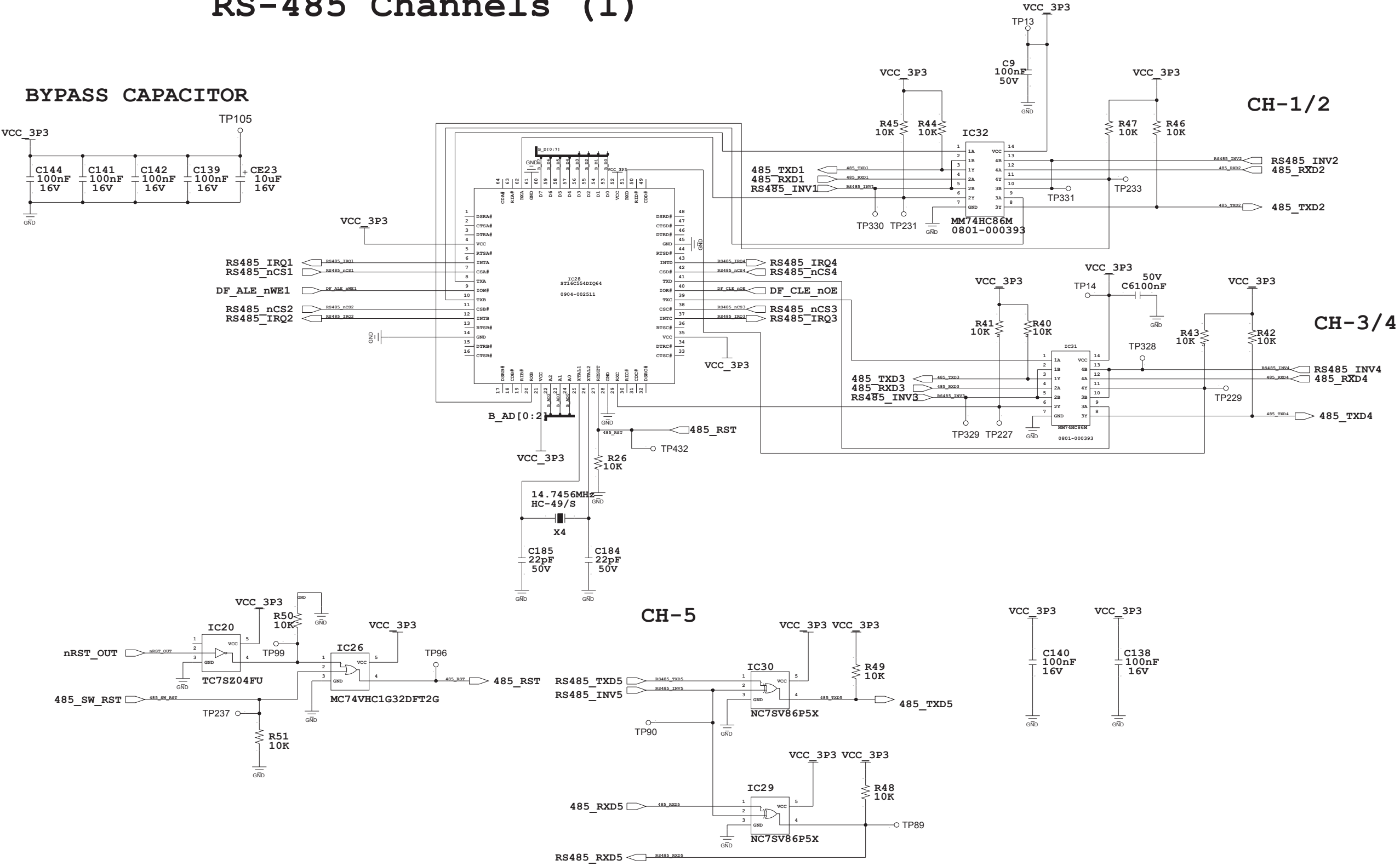
Main Board(cont.)

ETHERNET INTERFACE



Main Board(cont.)

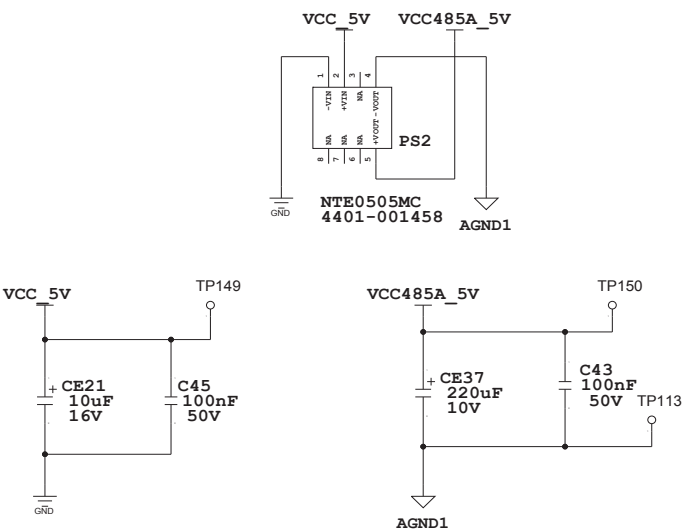
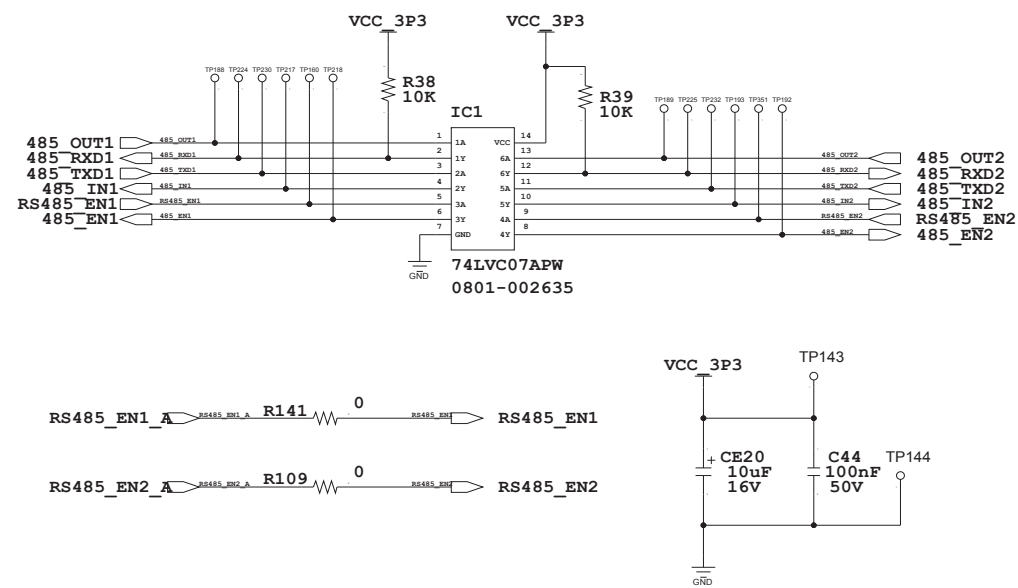
RS-485 Channels (1)



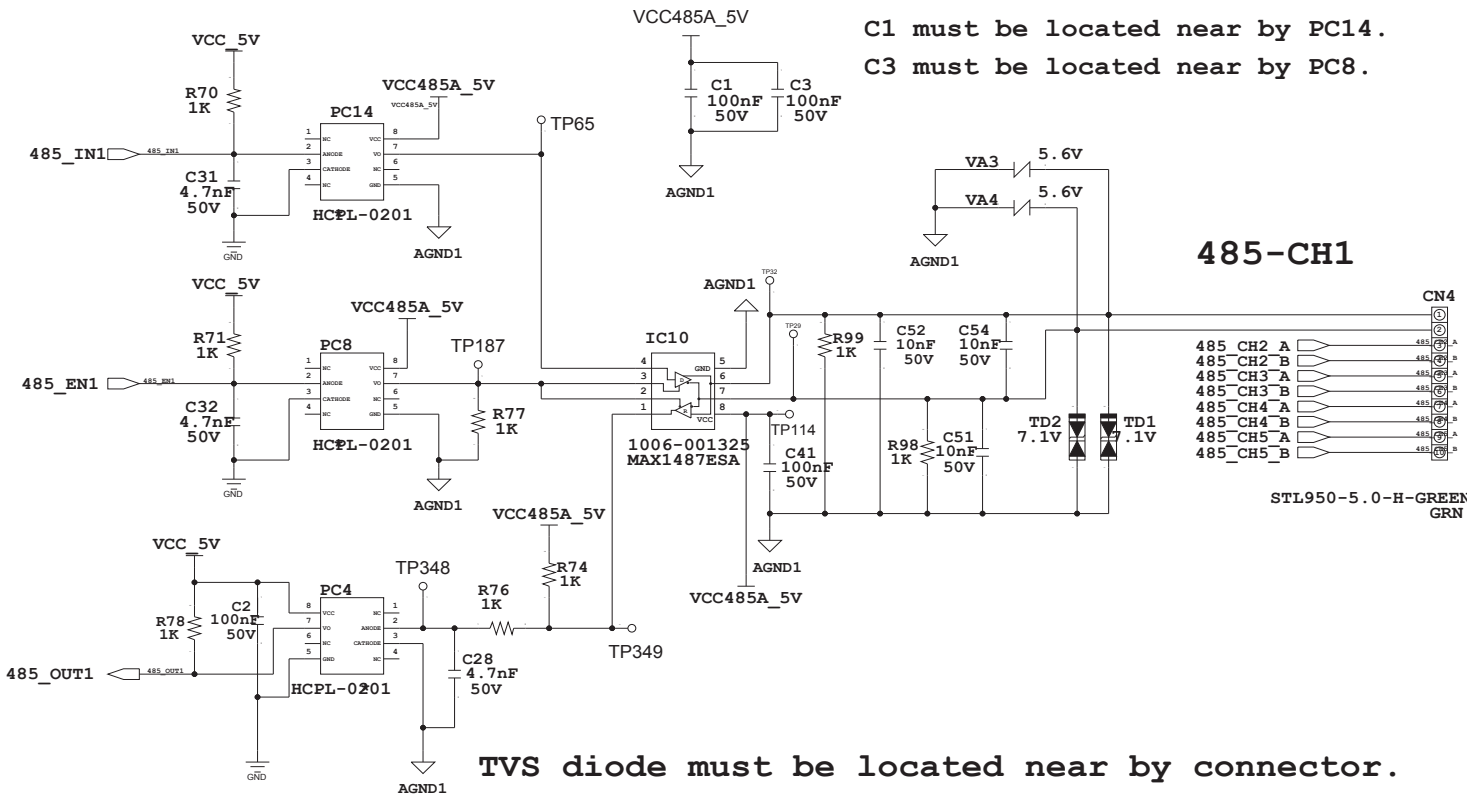


Main Board(cont.)

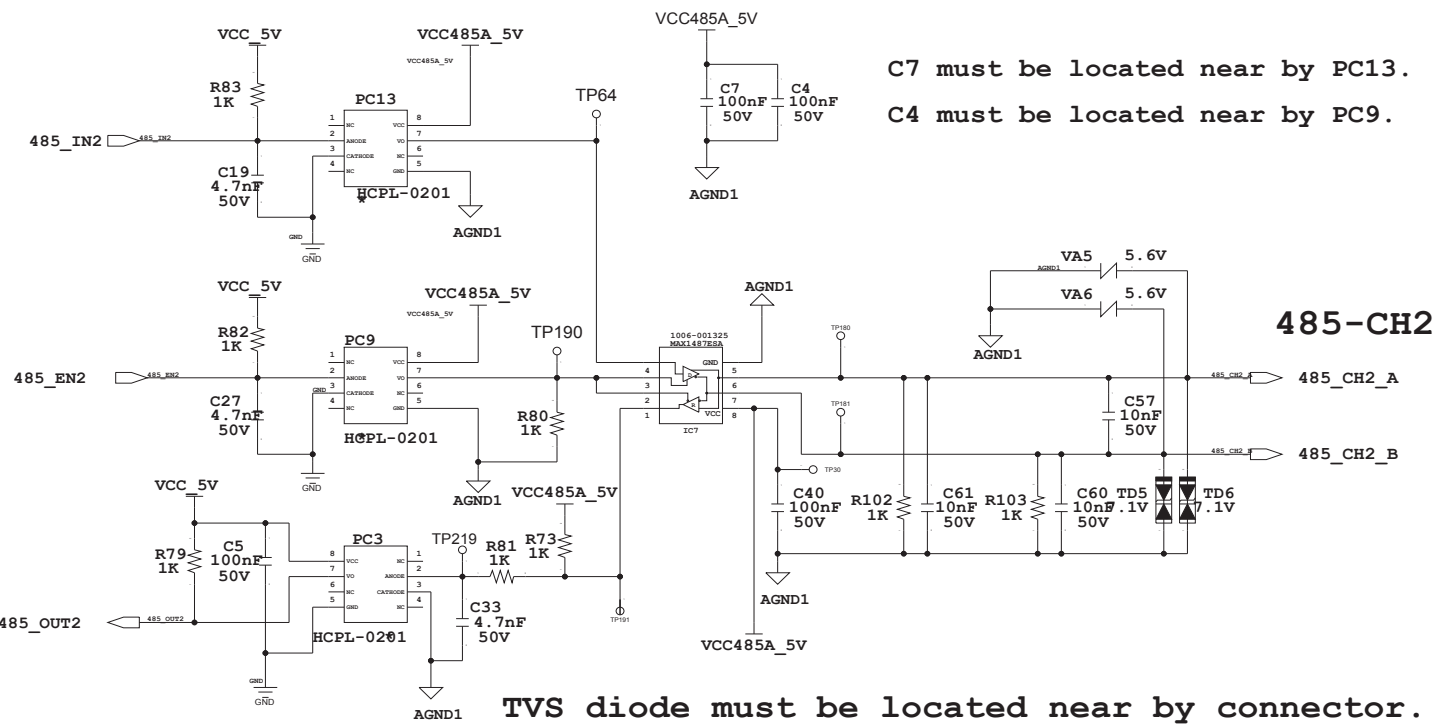
RS-485 Channels (2)



Each GNDs of 458A, 485B and 485C must be seperated from each other.



TVS diode must be located near by connector.

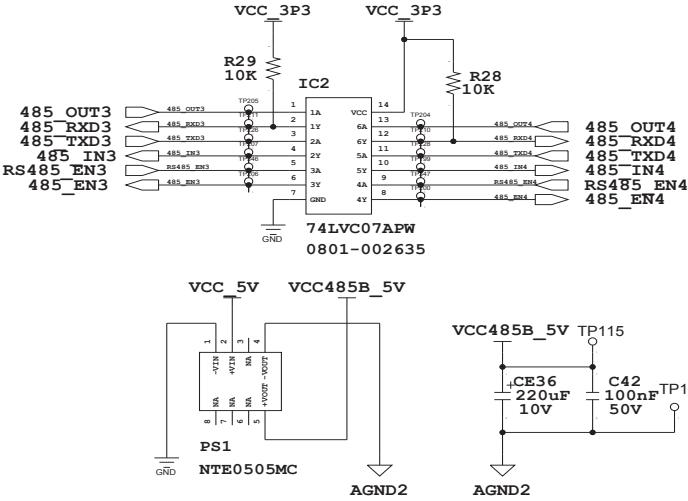


TVS diode must be located near by connector.

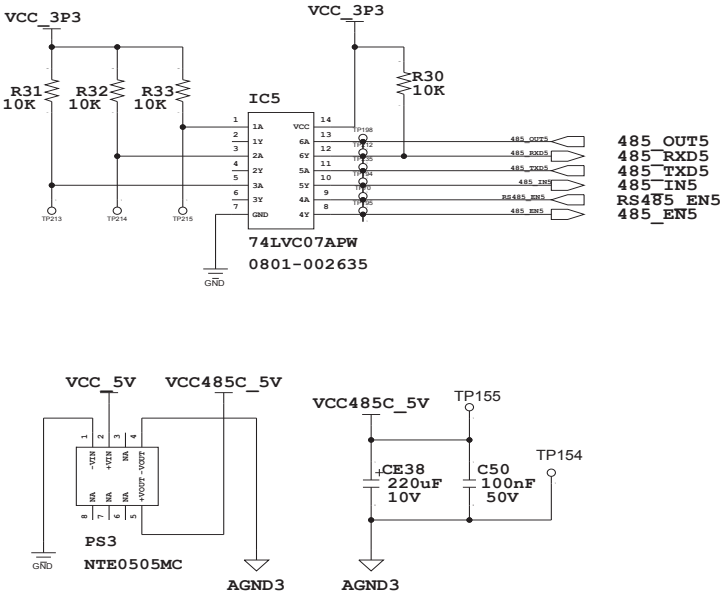


Main Board(cont.)

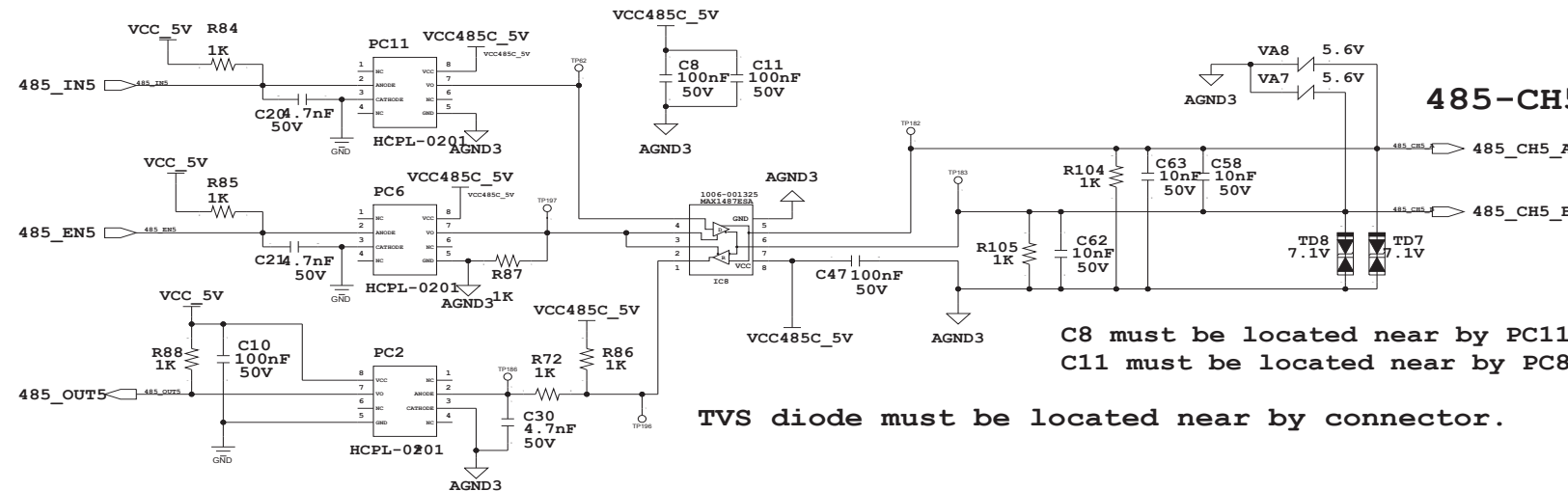
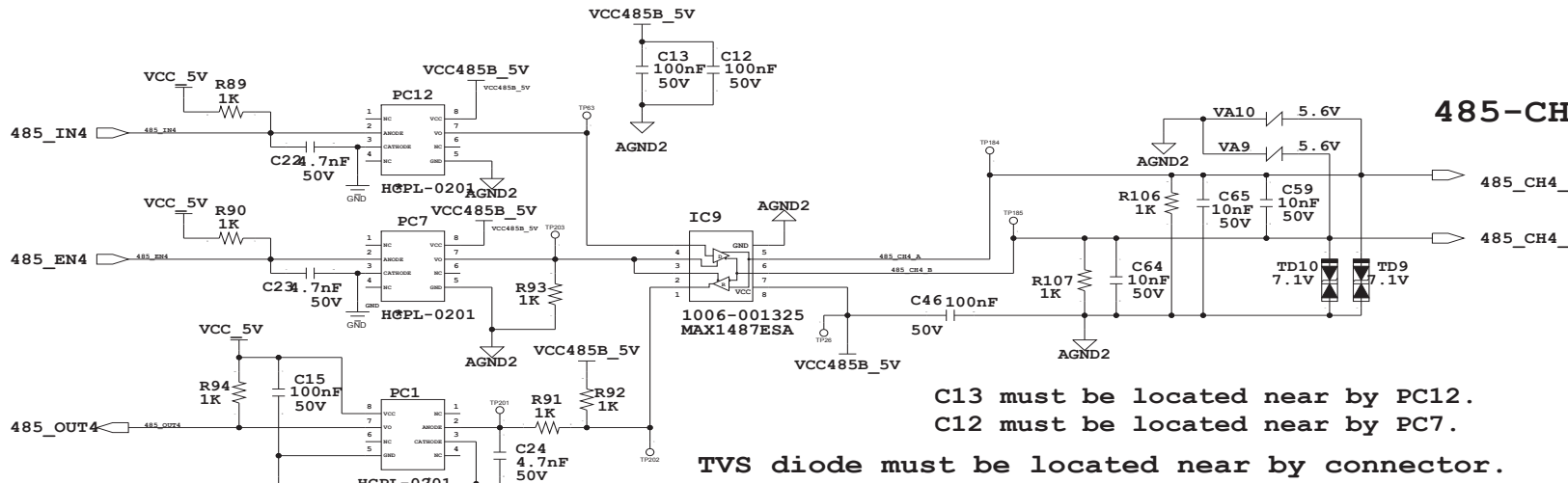
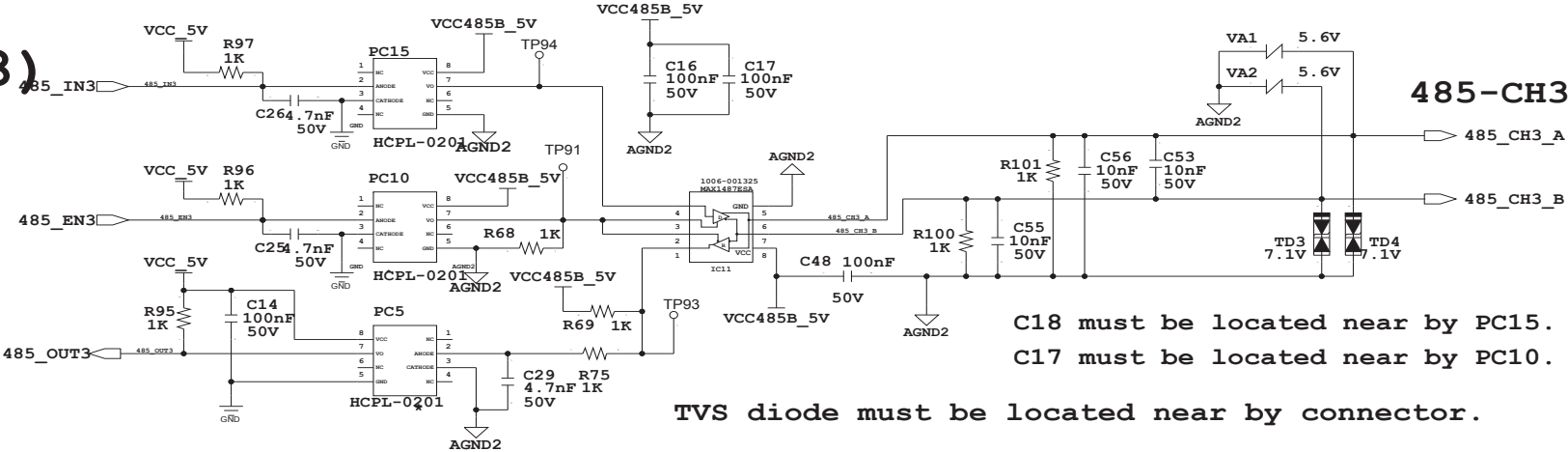
RS-485 Channels (3)



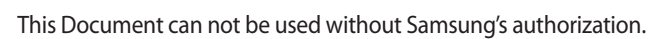
Each GNDs of 458A, 485B and 485C must be seperated from each other.



Each GNDs of 458A, 485B and 485C must be seperated from each other.



## DESIGN LEDs INTERFACE

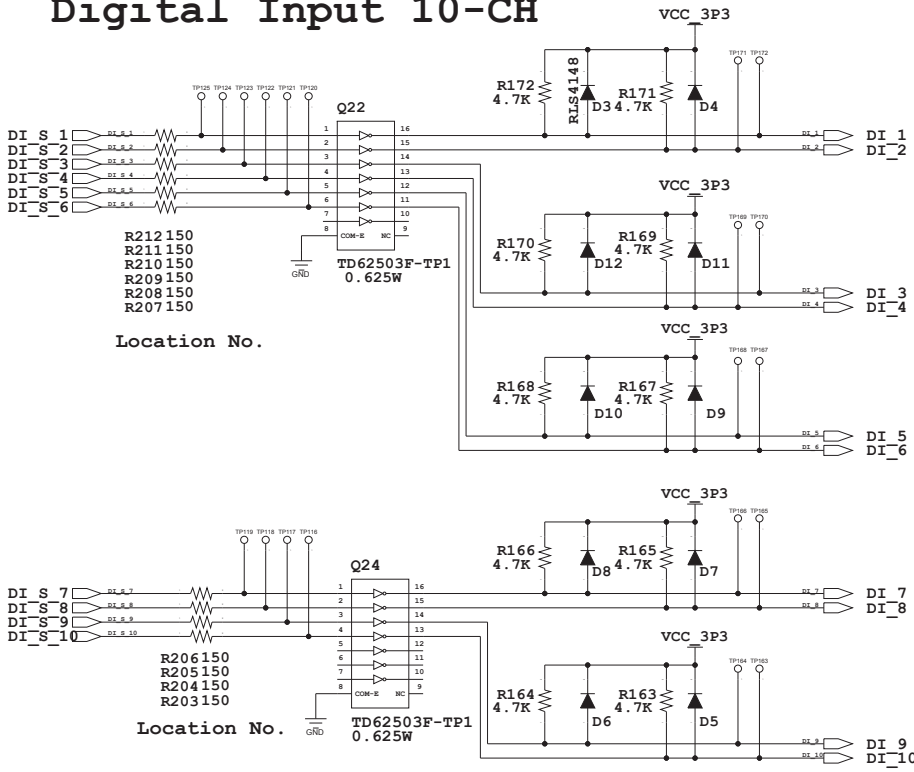


Main Board(cont.)

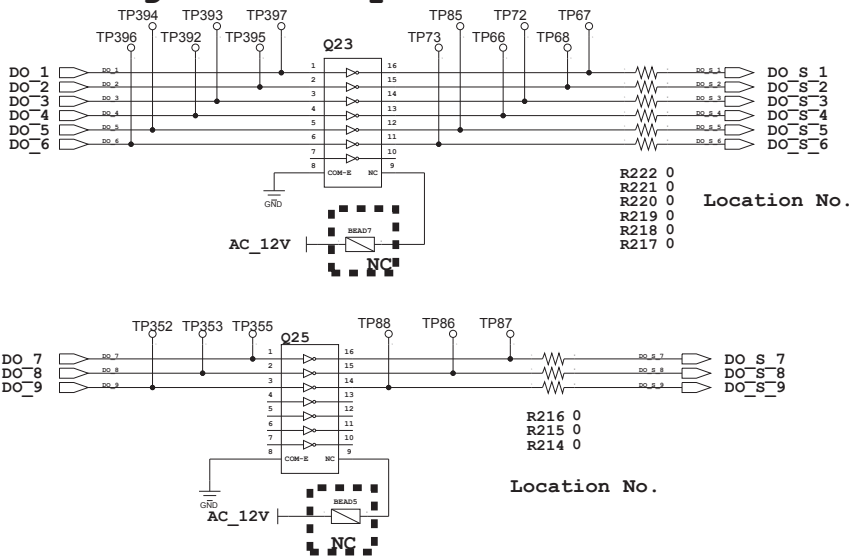
DIGITAL INPUT/DIGITAL OUTPUT INTERFACE

MAIN-Board & Sub-Board Connector

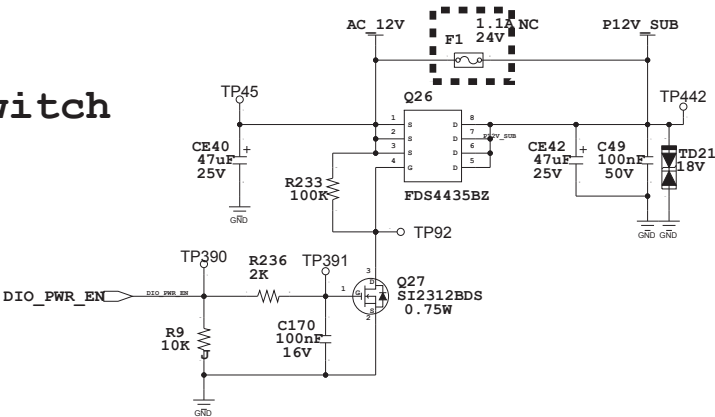
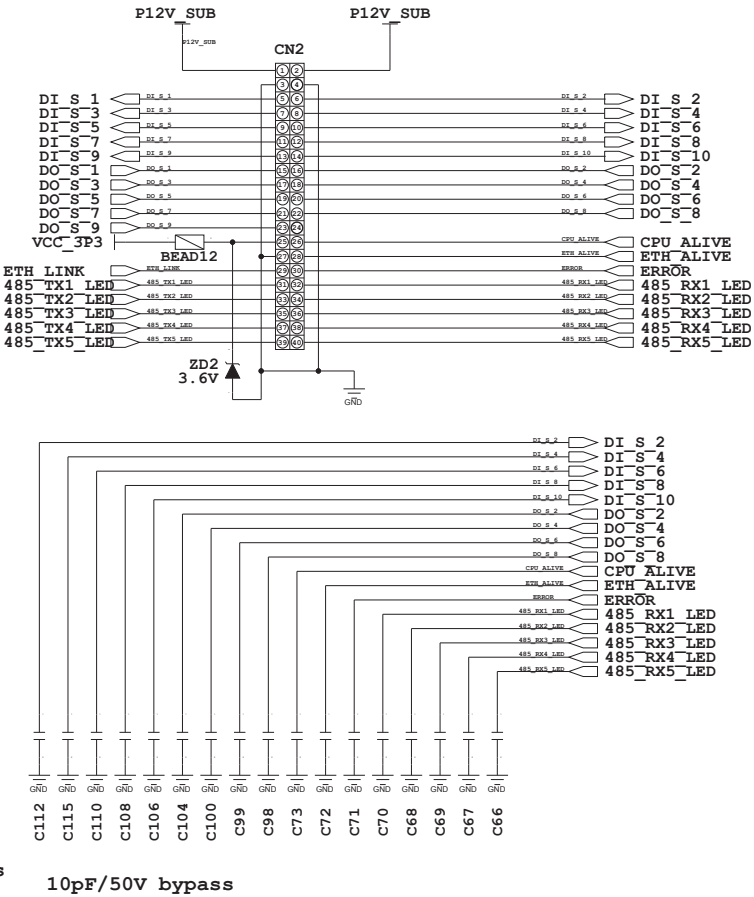
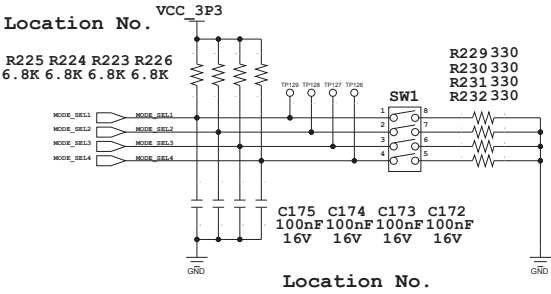
Digital Input 10-CH



Digital Output 10-CH

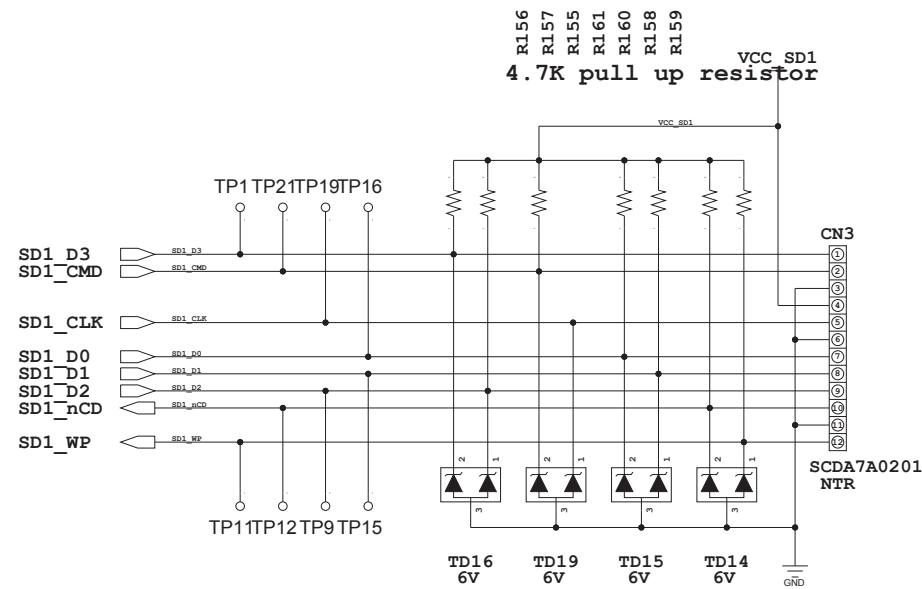


DI/DO Mode Select Switch

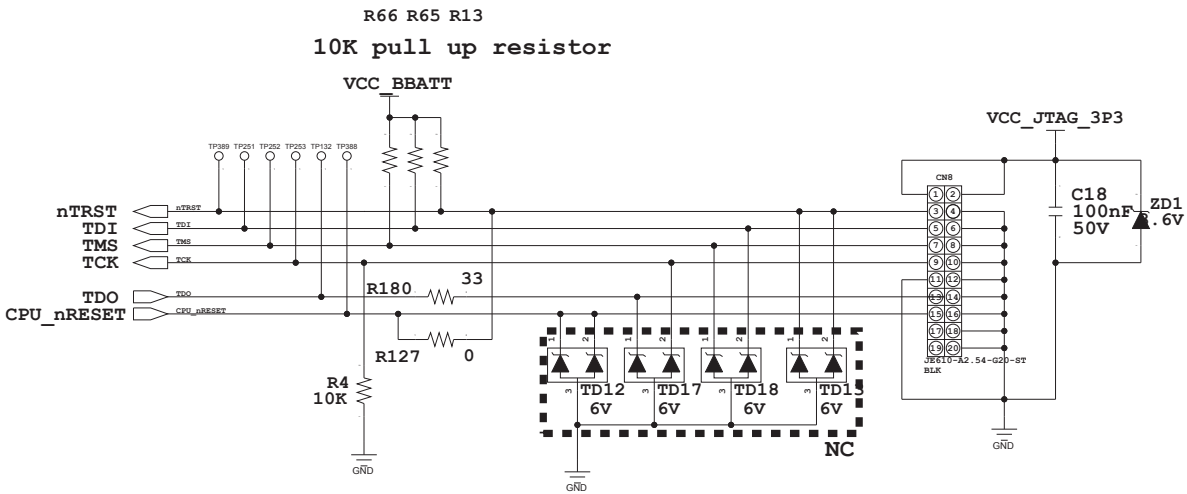


Main Board(cont.)

SD CARD

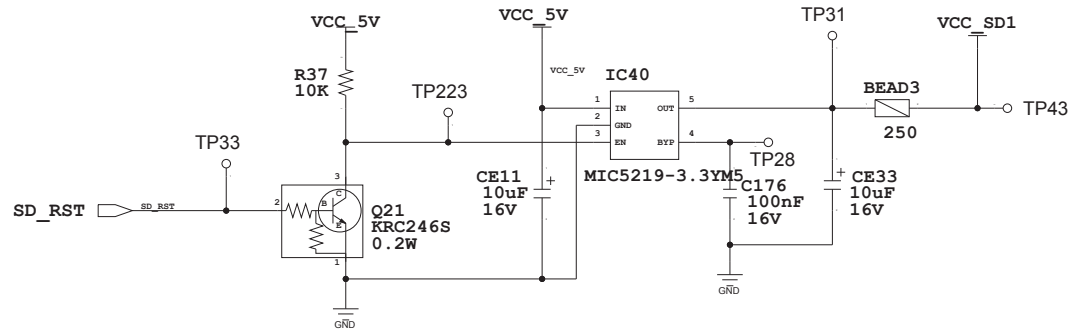


JTAG Interface



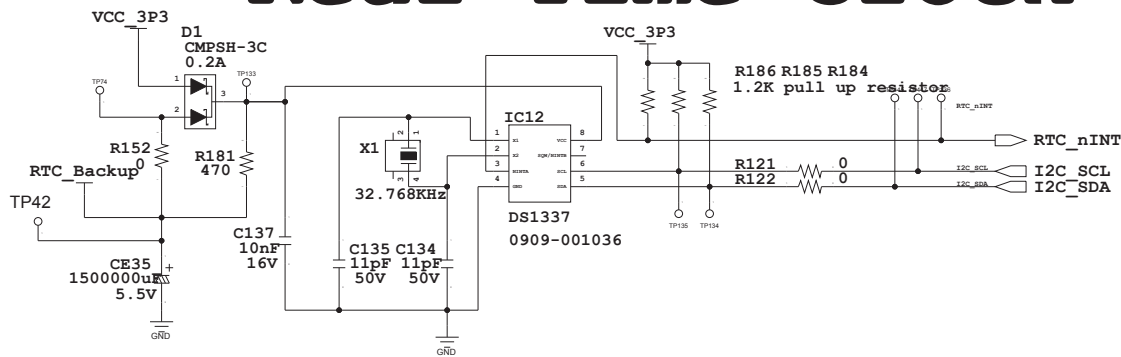
TVS diode must be located near by connector.

TVS diode must be located near by connector.

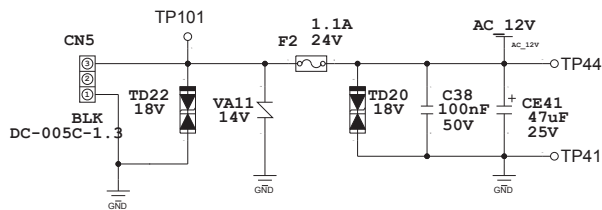


Main Board(cont.)

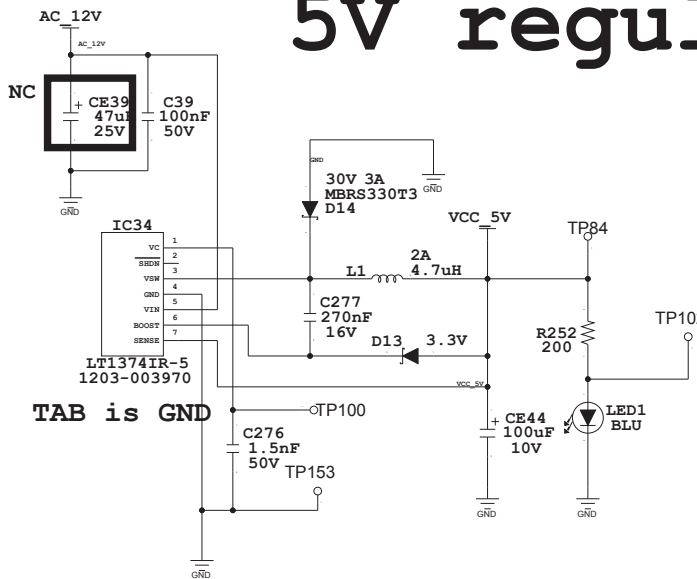
Real Time Clock



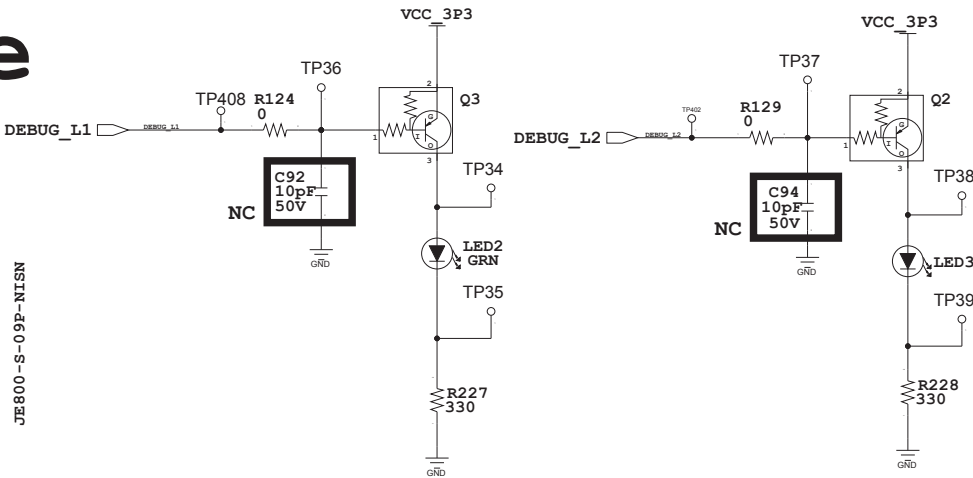
ADAPTOR



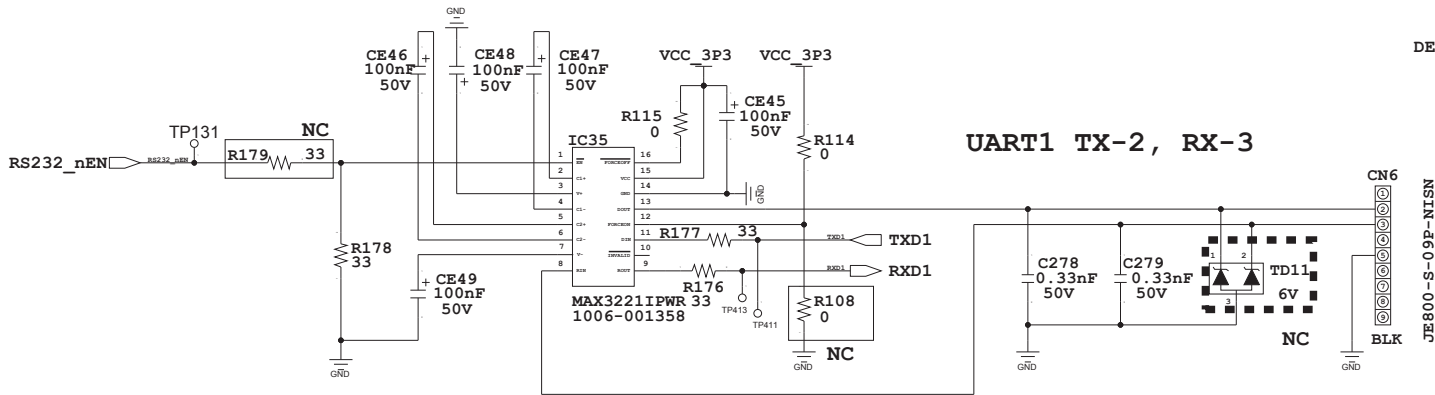
5V regulation



DEBUG LED



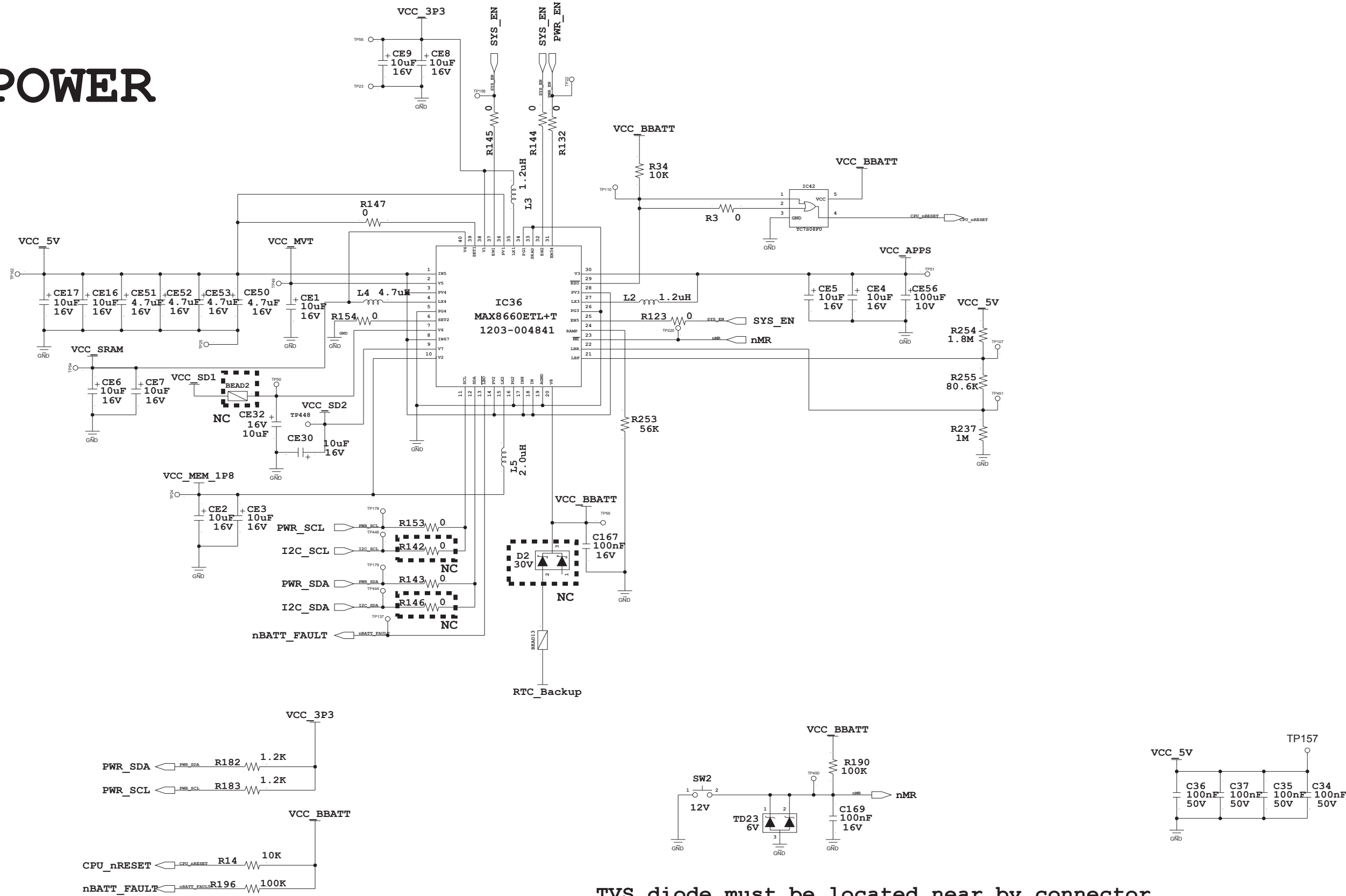
RS-232 Interface



TVS diode must be located near by connector.

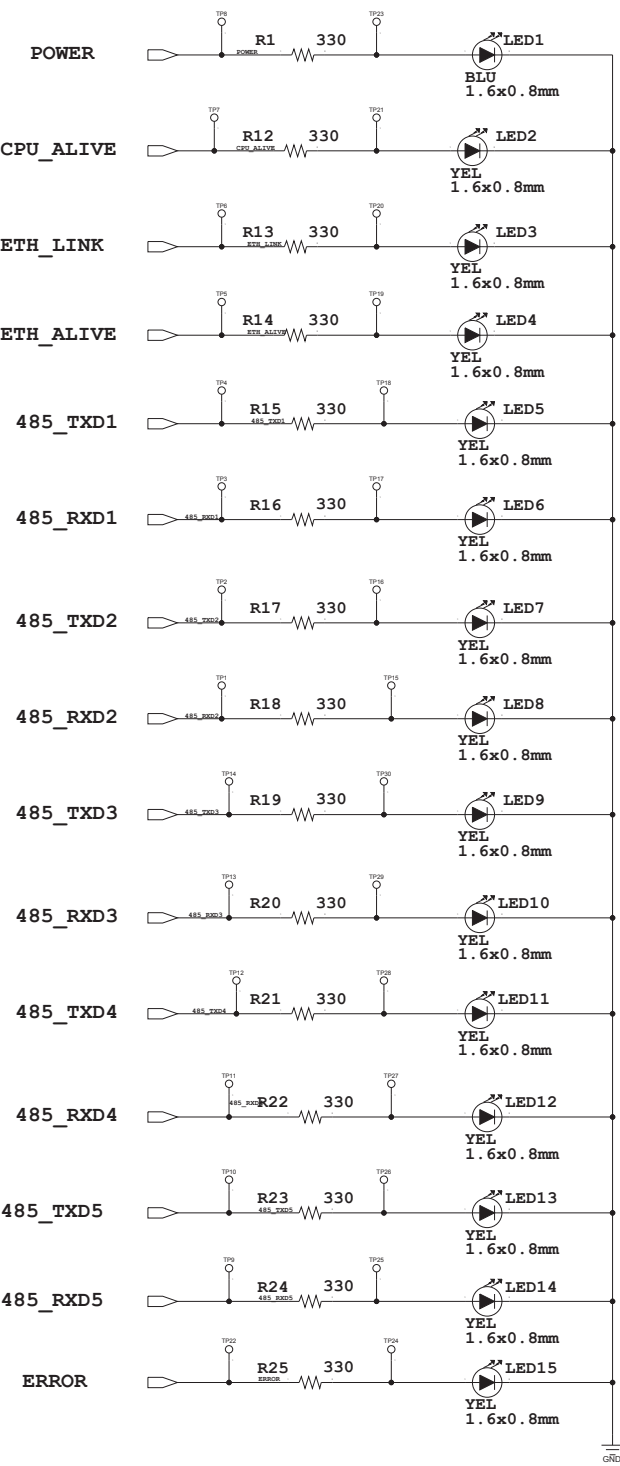
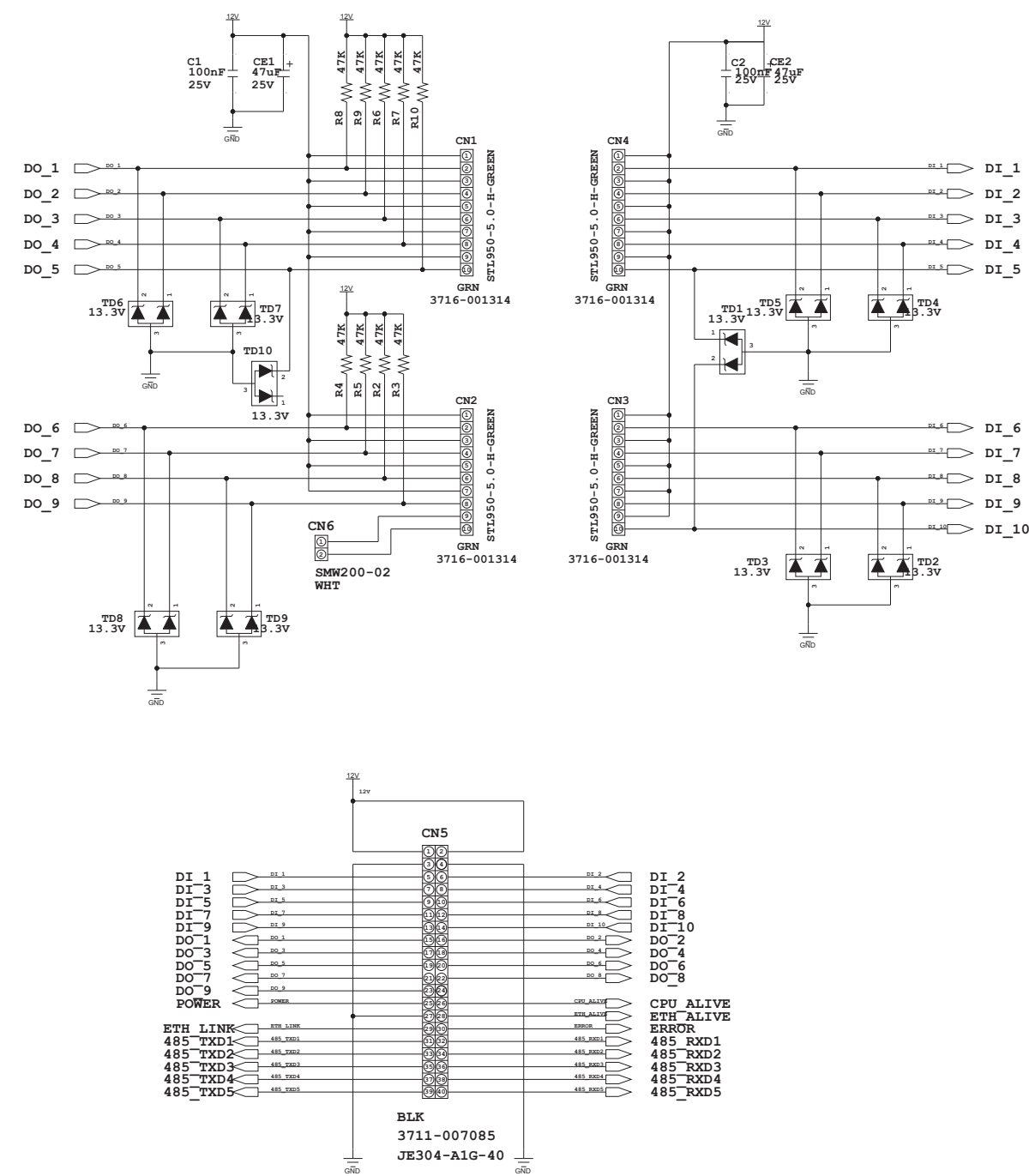
Main Board(cont.)

POWER



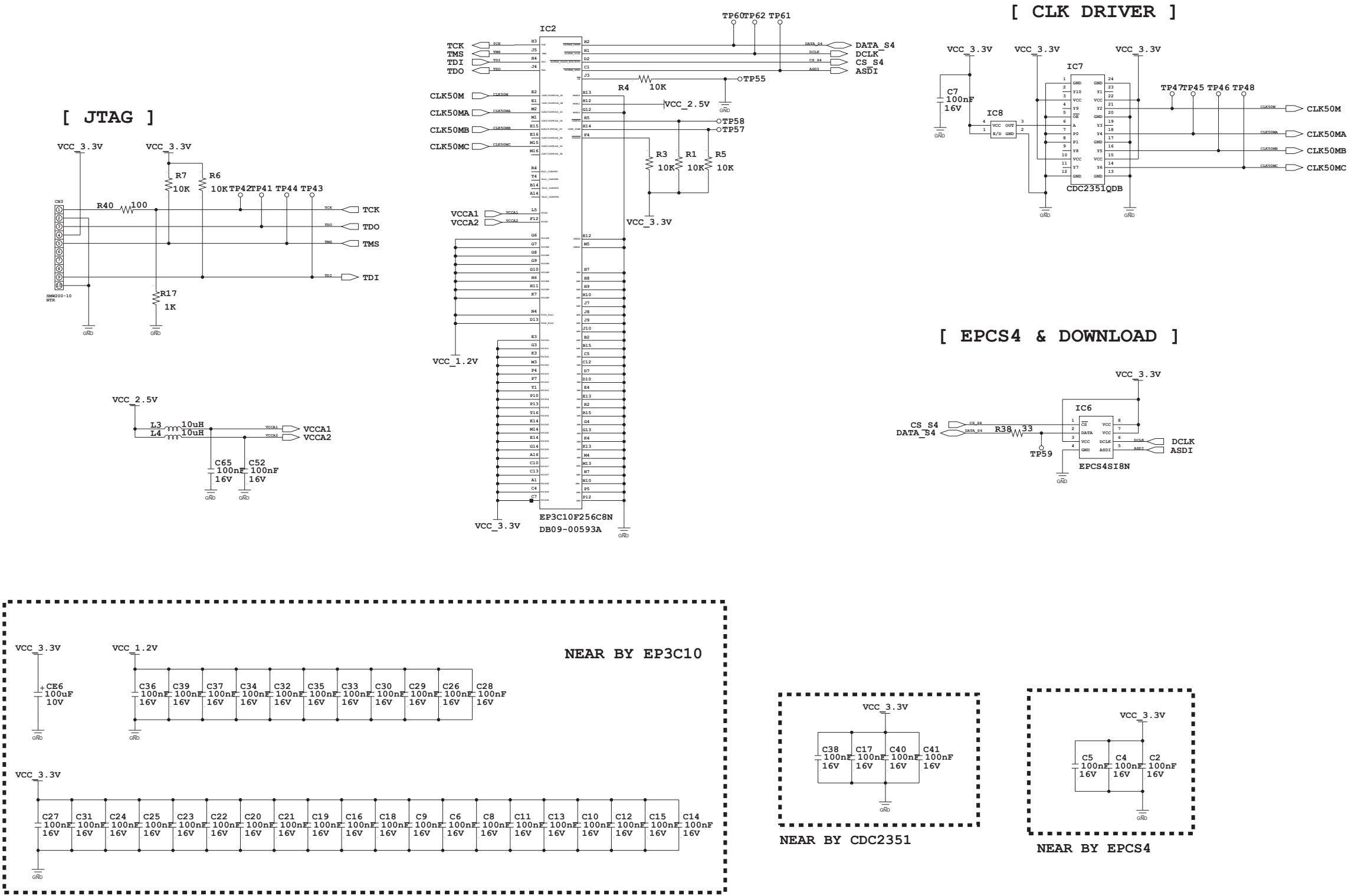
TVS diode must be located near by connector.

9-2. Sub Board



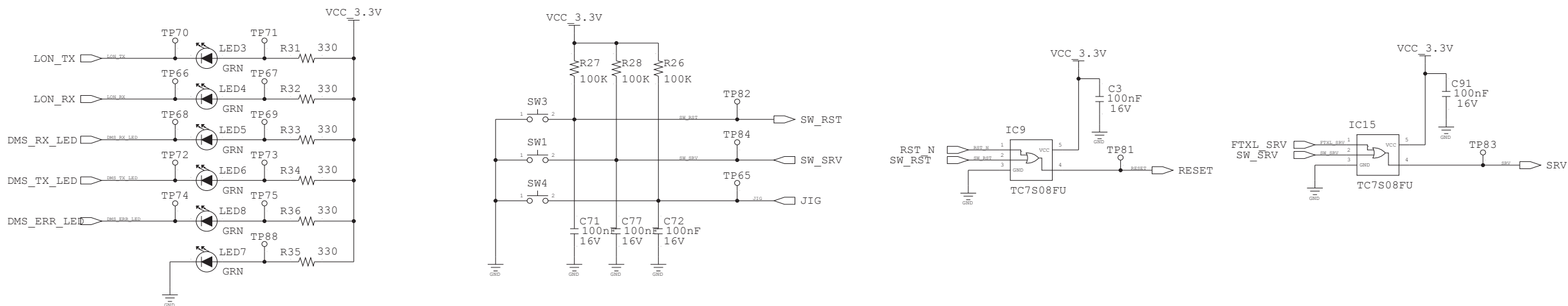


9-3. Module Board

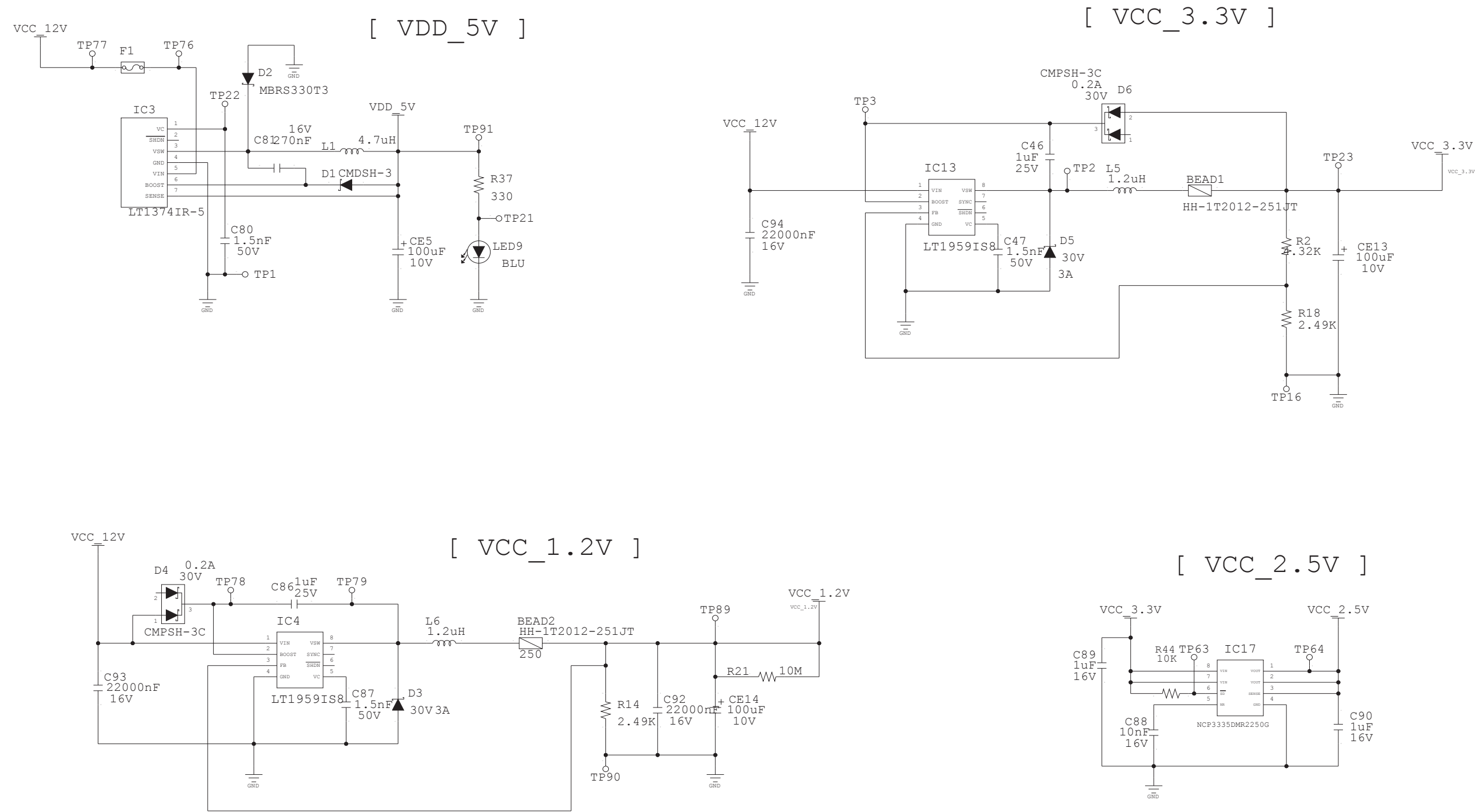




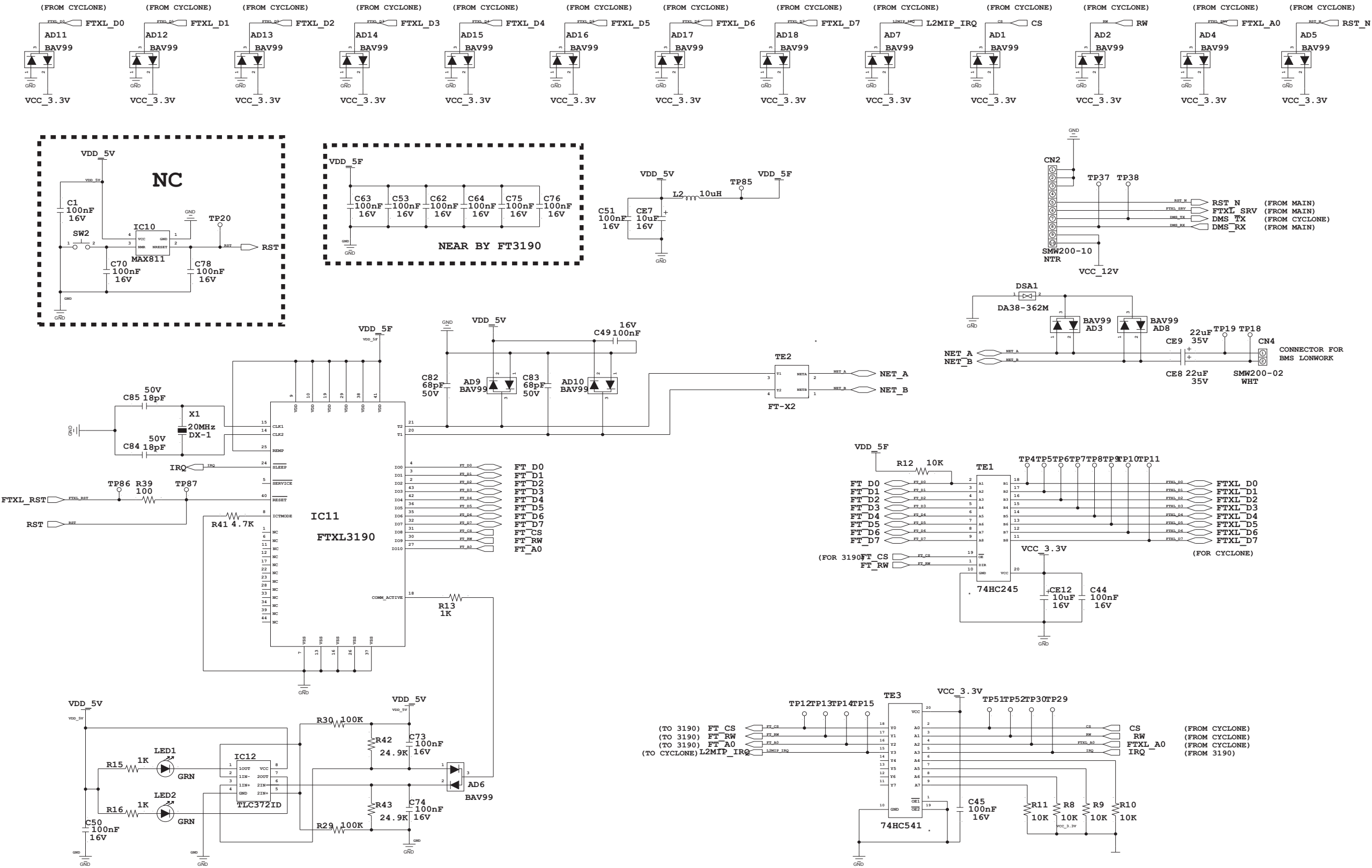
The diagram illustrates the NOR FLASH I/F section of a PCB layout. It features three main integrated circuits: IC2 (EP3C10F256CBN), IC3 (K8P5615UQA-PI4D), and IC1 (IS42S32400E-7TLI). IC2 is connected to a NOR FLASH I/F block, which includes signals for FLASH\_nCE, FLASH\_nOE, FLASH\_nWE, FLASH\_nRESET, FLASH\_nWP, FLASH\_RD/nBY, and FLASH\_nOE. IC3 is connected to a K8P5615UQA-PI4D block, which includes signals for TP27, TP49, TP50, TP26, TP25, and TP24. IC1 is connected to an IS42S32400E-7TLI block, which includes signals for SD\_A[0:11], SD\_BA0, SD\_BA1, SD\_CLK, SD\_CKE, SD\_nCS, SD\_nRAS, SD\_nCAS, SD\_nWE, SD\_DQM0, SD\_DQM1, SD\_DQM2, and SD\_DQM3. The layout also includes various peripheral components such as resistors (R22, R23, R24, R25, R19), capacitors (C42, C43, C60, C68, C58, C59, C69, C61, C67, C57, C56, C66, C54, C55), and LEDs (DMS\_RX, DMS\_TX, FTXL\_D0, FTXL\_D1, FTXL\_D2, FTXL\_D3, FTXL\_D4, FTXL\_D5, FTXL\_D6, FTXL\_D7, FTXL\_A0, L2MIP\_IR0). The layout is divided into several sections, including a NOR FLASH I/F section, a K8P5615UQA-PI4D section, an IS42S32400E-7TLI section, and a DMS section. The layout is labeled with various component values and pin numbers, and includes a legend for the NOR FLASH I/F section.



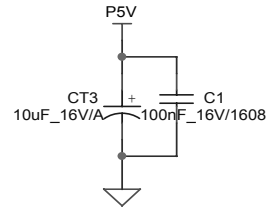
Module Board(cont.)



Module Board(cont.)

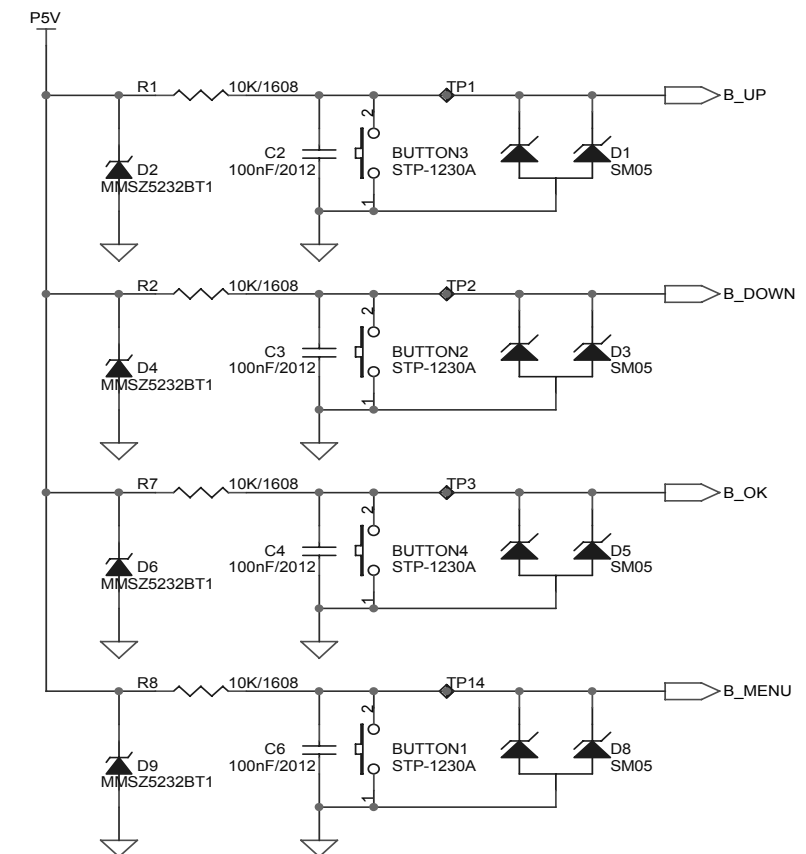
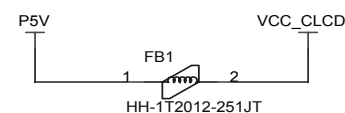
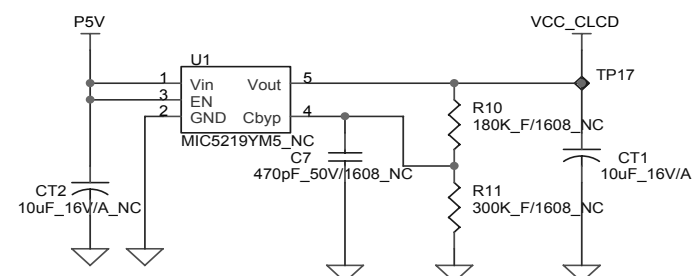
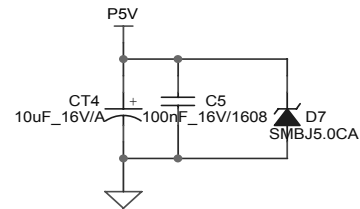


## MAIN INTERFACE



## BUTTON

## CHARACTER LCD INTERFACE





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